Individual differences in Cognitive Behaviour Therapy (CBT): Measuring pre-treatment CBT-like attitudes

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Summary

Investigating predictors of outcome provides an avenue for optimising response to empirically supported treatments like cognitive behaviour therapy (CBT). The match between an individual's pre-treatment attitudes and CBT has not been empirically examined as a predictor of CBT outcome. Across a number of empirical studies this thesis reports on development of the Skills Used In Therapy Survey (SUITS), which was designed to measure broad pre-treatment attitudes aligned with CBT via two short scales (Self and General).

Exploratory and confirmatory factor analyses within undergraduate and community samples indicated a strong factor structure for both SUITS scales. Adequate to good internal consistency was demonstrated across university, community, and clinical samples, while satisfactory test-retest reliability was demonstrated within a university sample. Evidence for the discriminant construct validity of the SUITS was found across empirical studies in relation to demographic variables, measures of psychopathology, verbal reasoning, and social desirability. Evidence for the convergent construct validity of the SUITS was found in relation to constructs reflecting therapy skills, adaptive functioning, and adaptive cognitive constructs specifically relevant to CBT. SUITS scores were found to predict credibility ratings of CBT treatment scripts, in isolation and independently of psychopathology, but not pharmacological interventions scripts, in a community sample. SUITS scores were also found to predict clinician-rated judgements of CBT-like attitudes in a university sample. Importantly, SUITS scores were found to predict treatment response immediately and three-months following treatment. Additionally, SUITS Self total scores were found to predict post treatment social anxiety over and above existing attitude predictors like motivation for change, expectancy for change, and treatment credibility. Overall, results from this thesis suggest that the SUITS is psychometrically sound. Pre-treatment CBT-like attitudes represent a promising predictor of CBT outcome that has the potential to inform clinical practice and improve treatment outcome for more clients.

Statement of Candidate

I certify that the work of this thesis entitled “Individual differences in Cognitive Behaviour Therapy (CBT): Measuring pre-treatment CBT-like attitudes” has not previously been submitted for a degree to any other university or institution.

I also certify that this is an original piece of research and it has been written by myself. Any help and assistance that I have received in my research work and the preparation of the thesis itself have been appropriately acknowledged. In addition, I certify that all the information sources and literature used are indicated in the thesis.

The research presented in this thesis was approved by the Macquarie University Human Research Ethics Committee. Ethics approval numbers: HE24OCT2008- D06179; 5201000100; 5201000252; 5201100092; 5201100093; 5201100270H.

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Date:

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Chapter 1

General Introduction

Thesis Overview

Extensive research indicates that cognitive behaviour therapy (CBT) is an efficacious treatment for a range of psychological disorders (Butler, Chapman, Forman, & Beck, 2006). Despite promising efficacy rates CBT does not work equally well for all clients (Eskildsen, Hougaard, & Rosenberg, 2010; Lincoln, et al., 2005; Rodebaugh, Holoway, & Heimberg, 2004). One avenue for exploring methods of optimising engagement and response to empirically supported treatments like CBT for more clients has been provided by research investigating factors that predict individual differences in treatment outcome. Although many domains of factors have been investigated as predictors of outcome, researchers suggest that it is important to consider differences between individuals (e.g., symptom severity or attitudes prior to commencing therapy) as predictors of outcome (Chambless & Ollendick, 2001). While not specific to research investigating individual differences as predictors of outcome, inconsistent findings are common. Symptom severity appears to be the most consistent individual difference predictor of CBT outcome (Eskildsen et al., 2010; Keeley, Storch, Merlo, & Geffken, 2008; Solvason, Ernst, & Roth, 2003), yet research using knowledge of this predictor of outcome to improve treatment response for more clients has typically been limited to investigations of extending treatment length (Hamilton & Dobson, 2002).

Attitude differences represent a category of individual differences that appear promising as predictors of outcome. Identified attitudes that have been examined as predictors of outcome include attitudes, prior to treatment, which are at odds with the underlying principles/requirements of treatment and therefore indicate potential obstacles to therapy or, alternatively, represent attitudes that are aligned with treatment and therefore indicate a potential match with therapy (Rodebaugh et al., 2004). For example, pre-treatment attitudes about motivation for symptom change, expectations for symptom change, and judgements about the credibility of CBT to facilitate symptom change have been investigated as predictors of outcome with mixed success. Inconsistent findings with respect to these attitude

factors predicting outcome may be a result of the symptom-focus of these attitudes. For example, when asking participants about credibility of treatment, it is usual for measures to include questions about how much the participant predicts their symptoms will improve as a result of the treatment (e.g., Devilly & Borkovec, 2000). Focusing on symptoms when measuring these attitudes means that responses potentially confound symptom severity with the attitude being investigated. This is problematic because symptom severity is already a strong predictor of treatment outcome (e.g., see Eskildsen et al., 2010). For example, null results with respect to these attitude factors predicting outcome in recent research may be because studies are now typically controlling for symptom severity (Price, Anderson, & Henrich, 2008). Examining the match between broader (i.e., not necessarily symptom focused) attitudes and the underlying principles and skills of CBT may provide more consistent prediction of treatment outcome, because the confounding influence of symptom severity is removed, but still offers useful information about potential obstacles to therapy prior to commencing treatment.

Individual differences in broad pre-treatment attitudes that are consistent with the principles and skills of CBT have not been examined as predictors of treatment outcome. One possible explanation for this lack of empirical investigation is that no pre-treatment measure of CBT-like attitudes exists. The aim of this research was to develop and investigate the psychometric properties of a new instrument that measures broad pre-treatment attitudes that are consistent with the principles and skills of CBT. This was a fundamental initial step in order to effectively empirically examine whether broad pre-treatment attitudes aligned with CBT predict outcome, another important aim of this research.

The current thesis consists of a general introduction, five empirical papers and an overall discussion of findings[1]. The background literature review is presented in the current chapter. The literature review begins with a rationale for, and then summary of, predictors of treatment outcome literature, focussing in more detail on individual difference predictors of CBT outcome and particularly individual differences in pre-treatment attitudes that are consistent with therapy. The review then presents literature that supports the investigation of broad pre-treatment CBT-like attitudes as a predictor of treatment outcome before outlining the common principles and components of CBT and providing a definition of pre-treatment CBT-like attitudes. Finally, a detailed overview of the thesis is presented, including the aims of each empirical paper.

Chapter 2 presents the first empirical paper containing two studies (one using an undergraduate sample and the other using a community sample) that report on the development, reliability and validity of an instrument to measure pre-treatment CBT-like attitudes, named the Skills Used In Therapy Survey (SUITS). CBT-like attitudes were measured from two standpoints, a personal agreement with CBT-like attitudes, as well as a general awareness of CBT-like attitudes, for example, the awareness that others may hold CBT-like attitudes. As a result, two scales were developed, named the SUITS Self and SUITS General respectively. The first paper provides evidence for the strong factor structure and adequate internal consistency of both SUITS scales across two samples. Promising evidence of the construct validity of the SUITS is demonstrated in relation to psychopathology, therapy skills, and general adaptive constructs like emotional intelligence and coping. Furthermore, SUITS scores were found to predict credibility ratings of analogue CBT intervention scripts but not pharmacological interventions scripts, as evidence for the criterion validity of the

[1] This thesis is presented as a non-traditional research thesis by publication as outlined by the Macquarie University Higher Degree Research Unit. It is comprised of seven chapters consisting of five individual empirical papers prepared for publication and an overall introduction and discussion. As a result, this structure necessitates some repetition across chapters.

SUITS within a non-clinical sample. SUITS scores also predicted CBT credibility over and above measures of psychopathology, demonstrating the incremental validity of the tool.

Chapter 3, the second empirical paper, provides additional evidence for the construct validity of the SUITS with respect to adaptive cognitive constructs (need for cognition and cognitive flexibility) and verbal intelligence in a nonclinical sample. Overall, SUITS scores were found to be unrelated to measures of verbal intelligence and associated with cognitive constructs particularly relevant to CBT. Chapter 4, paper three, also examines the psychometric properties of the SUITS. Within an undergraduate sample, adequate test-retest reliability over a brief interval was demonstrated and SUITS scores were found to be distinct from reports of social desirability. Additionally, SUITS scores predicted clinician ratings of CBT-like attitudes conveyed during a videotaped discussion with participants, providing evidence for the concurrent criterion validity of the SUITS.

Chapter 5 and 6 present the fourth and fifth empirical papers respectively. These papers investigate the psychometric properties of the SUITS within clinical samples. Paper four demonstrates that the factor structure of the SUITS is replicated within its intended sample of individuals seeking treatment. Importantly, in addition to further examining the validity of the SUITS within a clinical sample, paper five empirically investigates whether pre-treatment CBT-like attitudes measured via the SUITS predict outcome. In paper five SUITS scores were found to predict CBT outcome but not engagement. SUITS scores were also found to predict CBT post-treatment outcome over and above the typical symptom-focused attitude predictors currently investigated in the literature (e.g., motivation for change, expectancy for change, and treatment credibility).

Finally, chapter 7 presents an overview of findings outlined in this thesis, implications of results, as well as study limitations and suggestions for future research.

Efficacy and Effectiveness of Cognitive Behaviour Therapy (CBT)

Psychological disorders are widespread (Kessler et al., 2005b; Kessler, Chiu, Demler, & Walters, 2005) and place a large burden on individuals and society (Eaton et al., 2008). Australian research suggests that mental disorders represent the third highest disease group, after cardiovascular disease and cancer, explaining total burden of disease within Australia (Mathers, Vos, Stevenson, & Begg, 2001). Mathers and colleagues (2001) found that mental disorders were the leading cause of years of life lost to disability, explaining 30% of burden of disease not related to mortality. Given the huge impact of mental disorders, maximising the effectiveness of treatment for psychological disorders is a crucial endeavour.

Cognitive behaviour therapy (CBT) is one of the most extensively investigated psychological interventions (Butler et al., 2006). CBT has been modified for use with many psychological disorders, for example, depression, anxiety disorders, eating disorders, chronic pain, and schizophrenia (Butler et al., 2006), for use across the life-span (Kazdin, Siegal, & Bass, 1992; Kendall, 1994; Mohlman et al., 2003; Stanley, Beck, & Glassco, 1996; Thompson, Gallagher, & Steinmetz-Breckenridge, 1987; Zeiss & Breckenridge, 1997) and for delivery in individual, group, or online formats (Rodebaugh et al., 2004; Titov, Andrews, Johnston, Robinson, & Spence, 2010). Research indicates that cognitive behavioural treatments are efficacious for a range of psychological disorders. Reviews report that CBT is particularly efficacious for internalising disorders, for example, depression, generalised anxiety disorder (GAD), panic disorder, social phobia, and post-traumatic stress disorder (PTSD; Butler et al., 2006; Norton & Price, 2007). Effect sizes are large for these disorders when CBT is compared to no treatment, waitlist, or placebo control groups (0.95) and when CBT for bulimia nervosa is compared to pharmacotherapy. Importantly, effect sizes for CBT are particularly promising over the long-term (Butler et al., 2006).

Many researchers have suggested that it is important to determine whether efficacy rates generalise to naturalistic clinical research settings that operate outside the strict

requirements and implementation of research trials (Borkovec & Castonguay, 1998; Chambless & Hollon, 1998; Goldfried & Wolfe, 1998). Growing research indicates that the efficacy rates found for CBT are comparable, or only slightly lower, in clinical practice settings (McEvoy, 2007; McEvoy & Nathan, 2007; Oei & Boschen, 2009; Persons, Bostrom, & Bertagnolli, 1999; Rosenberg & Hougaard, 2005; Stuart, Treat, & Wade, 2000; Wade, Treat, & Stuart, 1998; Westbrook & Hill, 1998; Westbrook & Kirk, 2005). Overall, CBT has been recognised by many as an empirically supported treatment (Chambless & Ollendick, 2001).

Despite strong efficacy and effectiveness rates, empirical studies indicate that CBT interventions do not work equally well for all clients. Retention rates, adherence, and response to treatment are not optimal. Dropout rates for CBT vary based on definition (see Bados, Balaguer, & Saldana, 2007 and Salmoiraghi & Sambhi, 2010 for reviews). Typically dropout rates from CBT range from 10 – 20% in research studies (Eskildsen et al., 2010; Lincoln, et al., 2005; Rodebaugh et al., 2004) and in clinical practice settings (Davis, Hooke, & Page, 2006; Issakidis & Andrews, 2004), however much higher dropout rates have also been reported in the literature (50%; Persons, Burns & Perloff, 1988). Additionally, of those who remain in treatment not all clients comply with therapy requirements (Kozak, 1999). Furthermore, research across a range of disorders suggests that for those who remain in treatment between 16% and 50% of clients will show little or no reliable improvement (Borkovec, Newman, & Castonguay, 2004; Eskildsen et al., 2010; Hofmann & Bogels, 2006; Liebowitz et al., 1999; Lincoln et al, 2005; Rodebaugh et al., 2004; Turner, Beidel, Wolff, Spaulding, & Jacob, 1996; Vogel, Hansen, Stiles, & Gotestam, 2006; Westbrook & Kirk, 2005) or remain symptomatic (Keeley et al., 2008) following CBT.

As a result, an important goal of psychotherapy research has been to improve treatment effectiveness for more clients. In order to achieve this goal researchers have increasingly attempted to identify factors that predict variable response to treatment

(Westbrook & Kirk, 2005). Understanding the predictors of treatment outcome will either allow identified factors to be addressed prior to commencing standard CBT protocols, enable modifications to be made to standard CBT protocols, or provide information about suitability for CBT. It is therefore important to review research investigating predictors of CBT outcome and consider additional factors that may predict treatment outcome. The focus of this review therefore turns to the examination of predictors of CBT outcome.

Predictors of CBT Outcome

A broad range of factors has been investigated as predictors of CBT outcome. Research has typically identified therapeutic techniques, compliance with therapy tasks, aspects of the therapeutic relationship, and differences between individuals as broad categories of predictors of CBT outcome. Yet, despite the breadth of research (and ultimately, as a consequence of this breadth) consistent findings are rare within the literature. Inconsistencies in predictors of CBT outcome are considered to result from the varied methodologies, samples, measurement, and statistical procedures typical of research in the area (Hamilton & Dobson, 2002; Keeley et al., 2008; Steketee & Chambless, 1992). Acknowledging the limitations of research investigating predictors of CBT outcome, this review will briefly outline the therapy-related predictors of CBT outcome that have been investigated before summarising in more detail the individual differences that have been examined as predictors of CBT outcome.

Therapy-related predictors of CBT Outcome

Different therapy techniques have been examined as predictors of variable treatment response. For example, research has investigated whether behaviour, cognitive, and/or combined components of CBT produce more effective treatment results for social phobia (Chambless & Hope, 1996; Federoff & Taylor, 2001; Feske & Chambless, 1995; Gould, Buckminster, Pollack, Otto, & Yap, 1997; Mattick & Peters, 1988; Mattick, Peters & Clarke, 1989; Rodebaugh et al., 2004; Taylor, 1996). Overall, while it has been difficult to effectively

distinguish the two main interventions of CBT, exposure and cognitive restructuring, the findings suggest that all forms of CBT are important in producing change (Rodebaugh et al., 2004).

Instead, research has investigated compliance and adherence to CBT as a predictor of outcome. Findings suggest that client involvement in CBT is associated with positive outcome (Burns & Spangler, 2000). Furthermore, the results of a meta-analytic review show that setting homework assignments improved CBT outcome, and homework compliance predicted therapy outcome (Kazantzis, Deane, & Ronan, 2000). Adherence and compliance are considered to be important mechanisms of therapeutic change. Research has found that homework compliance may be particularly important during the early and later stages of CBT for anxiety disorders (Leung & Heimberg, 1996). It has been suggested that completing homework tasks, particularly during the later stages of CBT for anxiety disorders, represents a willingness to overcome the anxiety produced by active cognitive and behavioural tasks (Rodebaugh et al., 2004). Nevertheless, the findings regarding compliance and adherence as predictors of CBT outcome have been mixed. For example, while some studies have shown that compliance and adherence to CBT impact response when treating obsessive compulsive disorder (OCD; De Araujo, Ito, & Marks, 1996; Maher, Wang, Zuckoff, Wall, Franklin, Foa, & Simpson, 2012; Simpson, Maher, Wang, Bao, Foa, & Franklin, 2011), others have found homework compliance to be unrelated to outcome for OCD (Lax, Basoglu, & Marks, 1992; Woods, Chambless, & Steketee, 2002). Additionally, compliance has been found to be unrelated to CBT outcome for other anxiety disorders, like social phobia (Edelman & Chambless, 1995; Woody & Adessky, 2002).

Factors relating to therapists and the therapeutic relationship rather than therapeutic techniques have also been identified as potential predictors of treatment outcome. Therapist competence has been linked to CBT outcome for depression (Kuyken & Tsivrikos, 2009; Shaw et al., 1999; Trepka, Rees, Shapiro, Hardy, & Barkham, 2004). The therapeutic

relationship has also been examined as a predictor of outcome. Results suggest that the therapeutic alliance is moderately related to outcome across a range of therapies (Castonguay, Goldfried, Wiser, Raue, & Hayes, 1996; Martin, Garske, & Davis, 2000). Within CBT, therapeutic alliance has been found to impact CBT outcome when treating OCD (Keeley et al., 2008) and has been associated with greater engagement with therapy for social anxiety (Hayes, Hope, VanDyke, & Heimberg, 2007). However, null results have also been found for the therapeutic alliance as a predictor of CBT outcome (Woody & Adessky, 2002). Overall, there has been growing interest in the role of the therapeutic alliance in CBT (Leahy, 2008), particularly when investigating the indirect relationship between therapeutic alliance and outcome through links with other important variables, like homework compliance (Federici, Rowa, & Antony, 2010).

While it is clear that attention to therapeutic processes as predictors might lead to enhanced treatment procedures, researchers also suggest that it is particularly important to understand the factors that contribute to individual differences in treatment response in an effort to identify which treatments may be better suited to different individuals (Chambless & Ollendick, 2001). Individual difference factors that have been investigated as predictors of treatment outcome will therefore be reviewed in more detail below.

Individual difference predictors of CBT outcome

Demographic factors

Demographic factors have commonly been investigated as possible predictors of CBT outcome. While some studies have found that females respond better to CBT than males (Lincoln et al., 2005; Spek, Nyklicek, Cuijpers, & Pop, 2008), others have found that males were more improved following treatment (Foa et al., 1983) or were less likely to drop out (Herbert et al., 2005; McEvoy, 2007). Most studies examining gender as a predictor of treatment outcome however have found null results (Solvason et al., 2003). Similarly, inconsistent findings exist when age, socioeconomic status, income, level of education, and

marital status have been investigated as predictors of treatment outcome for CBT. Although at times older age (Morrison et al., 2012), lower socioeconomic status (Falconnier, 2009), lower income (Steketee, 1993), being unemployed (Buchanan, Meng & Marks, 1996), or being single prior to treatment (Rufer et al., 2005; Thase et al, 1992) have been found to predict worse outcome following CBT, demographic variables have typically not been found to predict treatment response (Eskildsen, et al., 2010; Hamilton & Dobson, 2002; Keeley et al., 2008; Lincoln et al., 2005; Solvason et al., 2003; Steketee & Shapiro, 1995; Watson & Nathan, 2008). Alternatively, it has been suggested that the relationship between demographic variables and outcome depends on the type of samples used (Steketee & Chambless, 1992), or may ultimately reflect differences in severity. As a result, controlling for severity means demographic variables are often not predictive of outcome (Keeley et al., 2008).

Disorder characteristics, comorbidity and symptom severity

Disorder characteristics, for example, subtypes of social phobia or OCD, comorbidity, and pre-treatment symptom severity, have been widely investigated as individual difference predictors of CBT outcome. When investigating features of diagnoses, research suggests that a diagnosis of generalised social phobia predicts worse outcome following CBT compared to non-generalised social phobia (Brown, Heimberg, & Juster, 1995; Hope, Herbert & White, 1995; Turner et al., 1996). Additionally, hoarding obsessions have been found to be more resistant to treatment than other types of obsessions (Abramowitz, Franklin, Schwarts, & Furr, 2003; Rufer, Fricke, Moritz, Kloss, & Hand, 2006).

Comorbidity has commonly been investigated as a predictor of CBT outcome. A greater number of Axis I diagnoses has been found to predict poorer outcome. Specifically, multiple anxiety diagnoses and comorbid anxiety and depression have been related to poorer CBT outcome (Federici et al., 2010). Yet, review papers suggest Axis I comorbidity has inconsistently been linked to poorer CBT outcome across studies (Keeley et al., 2008; McKay, Taylor, & Abramowitz, 2010). For example, while a review of predictors of CBT

outcome for social phobia found comorbid depression to be predictive of poorer outcome, results were restricted to studies that measured end-state functioning rather than rates of improvement (Chambless, Tran, & Glass, 1997; Erwin, Heimberg, Juster, & Mindlin, 2002). Furthermore, studies have also found no evidence of an association between comorbidity and reduced outcome (Kampman, Keijsers, Hoogduin, & Hendriks, 2008; Mennin, Heimberg, & Jack, 2000). Results have also been inconsistent with respect to other comorbid Axis I disorders. For example, it was found that problem drinking did not negatively impact CBT for anxiety disorders (McEvoy & Shand, 2008).

Research investigating the impact of Axis II comorbidity on treatment outcome indicates that personality disorders or traits, at times, predict poorer outcome for both anxiety disorders and depression (Chambless et al., 1997; Eskildsen et al., 2010; Keeley et al., 2008). However, research has failed to consistently identify the particular personality disorder traits associated with poorer outcome (Brown et al., 1995; Hope et al., 1995; Keeley et al., 2008). Overall, Axis II comorbidity appears to be more strongly associated with CBT outcome for depression rather than anxiety (Weertman, Arntz, Schouten, & Dressen, 2005).

Taken together, research indicates that features of disorder or comorbidity have inconsistently been related to treatment outcome and offer limited predictive value (Scholing & Emmelkamp, 1999). Rather, researchers suggest that higher initial symptom severity may account for the positive findings where comorbidity predicts treatment outcome (Eskildsen et al., 2010).

Pre-treatment symptom severity has been investigated as a predictor of treatment outcome in its own right. Research across a range of disorders suggests that symptom severity is a strong predictor of CBT outcome. In fact, symptom severity appears to be the most consistent predictor of CBT outcome across a range of disorders (Eskildsen et al., 2010; Hamilton & Dobson, 2002; Kampman et al., 2008; Keeley et al., 2008; Lincoln et al., 2005; Ong, Kuo, & Manber, 2008; Otto, et al., 2000; Solvason et al., 2003; Spek et al., 2008).

Although features of disorder, comorbidity and symptom severity are the individual differences that have been most commonly investigated as predictors of outcome, they offer limited value for improving CBT outcome for more clients. For example, clinicians already select treatment based on an individual's presenting symptoms. Additionally, identifying symptom severity as a strong predictor of treatment outcome has, at best, led to suggestions to increase treatment length in order to improve outcome (Hamilton & Dobson, 2002; Howard, Kopta, Krause, & Orlinsky, 1986). Investigating broader differences between individuals that may predict CBT outcome and provide greater utility for improving treatment response is clearly necessary.

Research has investigated individual differences beyond demographic variables, comorbidity, and symptom severity. Individual differences in anger, perfectionism, insight, self-esteem, and personality traits have been inconsistently related to outcome (Abramowitz, 2008; Blatt, Quinlan, Pilkonis, & Shae, 1995; Bosacki, Dane, Marini, & YLC-CURA, 2007; Bottlender & Soyka, 2005; Davis et al., 2006; Drury, Birchwood, Cochrane, & MacMillan, 1996a; 1996b; Erwin, Heimberg, Schneier, & Liebowitz, 2003; Federici et al., 2010; Harrington, Whittaker, Shoebridge, & Campbell, 1998; Hooke & Page, 2002; Kavanagh & Wilson, 1989; Lundh & Ost, 2001; McKay & Gruner, 2008; McKay et al., 2010; Mueser, Bolton, Mays, & Goff, 2001; Naeem, Kingdon, & Turkington, 2008; O'Leary & Costello, 2001; Rosser, Issakidis, & Peters, 2003; Spek et al., 2008; Steketee & Shapiro, 1995; Taylor & Asmundson, 2004; Taylor et al., 2001). Individual differences in attitudes considered to represent potential obstacles to treatment have been commonly investigated as predictors of outcome. A review of these individual difference factors will follow.

Attitude differences

Examining individual differences in beliefs and attitudes as predictors of outcome represents a growing area of research. It is also an important domain of potential predictors, since attitudes can be addressed in therapy. Therefore, attitude factors represent predictors of

outcome that can result in meaningful changes to clinical practice and as a result improvement in outcome for more clients. Research investigating individual differences in pre-treatment client attitudes has mostly focussed on client attitudes towards change and/or the treatment they are receiving. For example, research has examined the role of motivation for symptom change, expectancy for symptom change, and the credibility of treatment as potential individual differences that predict outcome.

Motivation to change has been defined as an active state associated with initiating and maintaining actions directed towards achieving new behavioural goals (Miller & Rollnick, 1991). A recent meta-analysis reported that motivation or readiness for change has a mean effect size of d = .46 when predicting treatment outcome (Norcross, Krebs, & Prochaska, 2011). Importantly, however, most research investigating motivation for change has been within the area of behavioural health, focussing on treatment for alcohol or substance abuse and eating disorders (Boswell, Sauer-Zavala, Gallagher, Delgado, & Barlow, 2012).

Research directly linking motivation or readiness for change with treatment outcome beyond the area of behavioural health has predominantly involved pharmacological interventions. Readiness to change has been linked to positive outcome in pharmacological studies for panic disorder (Beitman et al., 1994; Reid, Nair, Mistry, & Beitman, 1996), GAD (Wilson, Bell Dolan, & Beitman, 1997), and OCD (Pinto, Nezoroglu, & Yaryura-Tobias, 2007).

Despite increasing popularity in clinical research since the development of motivational interviewing or enhancement (Arkowitz, Westra, & Miller, 2007) empirical research within psychotherapy is limited. Furthermore, when individual differences in pre-treatment motivation for change have been investigated as a predictor of CBT outcome results are inconsistent across the literature. Research has found that stronger motivation for change predicted greater improvement following CBT for OCD (de Haan et al., 1997; Steketee et al., 2011), greater reductions in obsessive fears (Keijsers, Hoogduin, & Schaap, 1994a), and

treatment completion (Keijsers, Kampman, & Hoogduin, 2001), as well as positive outcome for panic disorder (Keijsers, Hoogduin, & Schaap, 1994b). However, motivation has only been weakly associated with treatment response (Keijsers et al., 1994b) and at times has not been found to predict CBT outcome (Kampman et al., 2008; Vogel et al., 2006; Wolk & Devlin, 2001).

Another attitude factor that has been investigated as a predictor of treatment outcome is a client's expectations for symptom change. Expectations for change have been defined as an individual's belief about the usefulness of treatment or the ability for treatment to help shift symptoms (Constantino, Arnkoff, Glass, Ametrano, & Smith, 2011). Within the last two decades, some studies have found that expectancy for change is positively associated with CBT outcome. For example, greater positive expectations for change have predicted CBT outcome for social phobia (Safren, Heimberg, & Juster, 1997) and chronic lower back pain (Smeets et al., 2008). However, at times, expectancy for change has been related to outcome at post-treatment but not at longer follow-up intervals (Price et al., 2008). Furthermore, the relationship between positive expectations and outcome is typically mixed, with expectations being linked to outcome in some but not all measures within studies (Chambless et al., 1997). Additionally, expectancy for change has also not been found to predict treatment outcome (Borkovec, Newman, Pincus, & Lytle, 2002) and dropout (Safren et al., 1997).

Although considered to be similar to expectancy for change (Greenberg, Constantino, & Bruce, 2006), treatment credibility has been defined as the degree to which treatment is considered to logically bring about symptom change (Devilly & Borkovec, 2000). While expectancy for change is considered to contain an emotional component, treatment credibility is thought to represent a more cognitive assessment of the likelihood that treatment will facilitate change (Devilly & Borkovec, 2000). Treatment credibility research suggests that CBT is generally considered a credible treatment for many disorders (Deacon & Abramowitz, 2005). Individual differences in ratings of treatment credibility have also been examined as

potential predictors of treatment outcome. Credibility has been linked with therapeutic improvement (Abramowitz, Franklin, Zoellner, & Di Bernardo, 2002; Addis & Jacobson, 2000; Borkovec et al., 2002; Hellstrom & Ost, 1996; Kirsch & Henry, 1977; Ost, Stridh, & Wolf, 1998; Smeets et al., 2008), early response to treatment (Fennell & Teasdale, 1987), and greater engagement with therapy tasks (Ahmed & Westra, 2009). However, other research has failed to find a relationship between credibility and outcome (Borkovec & Mathews, 1988; Devilly & Borkovec, 2000; Smith, Norton, & McLean 2012).

Importantly, the fact that these attitude factors have been related to CBT outcome suggests that individual differences in pre-treatment attitudes impact outcome (Federici et al., 2010). Furthermore, the attitudes most commonly investigated as predictors of treatment outcome are attitudes that represent potential obstacles to treatment or alternatively suggest a pre-treatment attitudinal match with underlying therapy assumptions. CBT takes effort and requires active participation and implementation of skills. Therefore, for treatment to be effective a high level of motivation for change, belief in the ability to achieve change, and belief that change will result from the described treatment are considered to be important. These attitudes may be particularly important for CBT treatment of anxiety disorders which requires exposure to anxiety provoking situations and the ability to endure anxiety (Rodebaugh et al., 2004; Smith et al., 2012). Identifying pre-treatment individual differences in attitudes that reflect an underlying agreement with therapy is one avenue for predicting treatment, particularly CBT, outcome.

Yet, results are not always positive. Inconsistent and null findings with respect to the particular attitude factors that have been identified as predictors of outcome may be a result of the specificity of the types of attitudes that have been examined. Typically investigated attitudes (i.e., motivation for change, expectancy for change, and credibility of the treatment in facilitating symptom change) are rated in relation to symptoms or symptom change. Given symptom severity is the most consistent predictor of treatment outcome it may be difficult for

symptom-focused attitudes to predict treatment outcome independently of symptom severity. Alternatively, investigating broader attitudes (i.e., attitudes beyond symptoms) that represent a match with treatment, or inversely indicate possible obstacles to therapy, may allow more consistent prediction of treatment outcome and one that exists over and above symptom severity. Importantly, measuring broader attitudes still provides the opportunity to work, in therapy, with attitudes identified as being at odds with treatment. As a result, broadening therapy-matched attitudes would continue to enable improvements in treatment response for more clients.

One strategy for measuring broad attitudes that may align with treatment would be to assess whether an individual holds pre-treatment attitudes that align with the philosophical principles of CBT and the skills of therapy. Pre-treatment CBT-like attitudes might be expected to predict treatment outcome. This review will now outline research that supports the suggestion that pre-treatment CBT-like attitudes may predict CBT outcome.

CBT-like Attitudes

A number of research areas suggest a broad (non-symptom focused) attitudinal match with treatment may be linked with treatment outcome. Identifying pre-treatment CBT-like attitudes as a predictor of treatment outcome seems worthwhile based on research that suggests effective treatment capitalises on an individual's strengths rather than provides compensation for weaknesses (Baker & Neimeyer, 2003; Beutler et al., 1991; Beutler, Harwood, Kimpara, Verdirame, & Blau, 2011; Beutler, Machado, Engle, & Mohr, 1993; Elkin et al., 1999; Kadden, Cooney, Getter, & Litt, 1989; Kocsis et al., 2009; Rude, 1986; Rude & Rehm, 1991; Simons, Lustman, Wetzel, & Murphy, 1985; Sotsky et al., 1991; van Doorn, McManus, & Yiend, 2012). Within this body of literature some studies have considered broad factors that match with treatment. Research has found that participants in clinical trials who are assigned the treatment they prefer engage more, report a stronger therapeutic alliance (Elkin et al., 1999), and achieve better remission rates (Kocsis et al.,

2009) than participants who receive the treatment they did not prefer. Although effects are typically small, this may be a result of the use of clinical trials. Participants in clinical trials agree to random allocation, so may have weaker preferences for treatment than might be the case for individuals who receive treatment in standard clinical practice. As a result, effects may be larger in naturalistic clinical settings (Swift & Callahan, 2009).

More broadly, research has investigated the match between an individual's preferred coping style and the treatment orientation. For example, it has been suggested that externalising coping strategies match treatments oriented towards behaviour change, while internalising coping strategies match insight-oriented therapies (Beutler et al., 1991). Studies indicate that when coping style is considered to match treatment in this way, clients respond better initially (Beutler et al., 1991; Kadden et al., 1989) and at one year follow-up (Beutler et al., 1993) than when there is a mismatch between coping style and treatment. Furthermore, reviews suggest moderate effect sizes have typically been found linking broad coping styles to matched treatments (Beutler et al., 2011).

Additionally, researchers have investigated a link between preferred learning styles and therapy. Active experimentation and abstract conceptualisation are two of many possible learning styles. Active experimentation reflects a preference to learn from engaging and experimenting with tasks, while abstract conceptualisation involves taking an analytical approach to learning (van Doorn et al., 2012). Van Doorn and colleagues (2012) found that clients who preferred the active experimentation learning approach reported better response to behavioural treatment components, while those who preferred abstract conceptualisation approaches to learning responded better to the cognitive therapy approach to treatment. This research suggests that pre-treatment CBT-like attitudes might determine suitability for CBT in addition to predicting outcome.

While research has at times failed to find evidence that matching to treatment produces better outcomes (see Rude & Rehm, 1991 for a review), studies with null findings

typically utilise a narrow range of factors to match individuals to treatment. Typically, studies that fail to find evidence of treatment's capitalisation effects have matched clients to treatment based on diagnostic-related factors (Project Match Research Group, 1997; Watzke et al., 2010;) or factors that may confound symptom severity (Borge, Hoffart, & Sexton, 2010; Jarrett & Nelson, 1987). Research taking a broader approach and acknowledging the person of the client beyond their disorder and symptoms is considered important (Norcross & Wampold, 2010) and appears promising within treatment matching literature.

Overall, the treatment-matching literature suggests that individuals may be effectively matched to treatment based on pre-treatment characteristics that are not related to symptoms, but reflect an underlying agreement or alignment with therapy. Individual differences in broad pre-treatment CBT-like attitudes, therefore, seem to represent a worthwhile potential predictor of treatment outcome or factor that may determine suitability for CBT.

Further support for identifying differences in pre-treatment CBT-like attitudes comes from research which has demonstrated the importance of a similar construct. Psychological mindedness is a construct that represents pre-treatment levels of the skills necessary to engage in psychodynamic therapy. Psychological mindedness research supports the idea that a pre-treatment match with therapy is an important factor in treatment outcome. Psychological mindedness was originally defined as "the client's ability to see the relationship among thoughts, feelings, and actions with the goal of learning the meanings and causes of experiences and behaviour" (Appelbaum, 1973, p. 36). This definition is broad but closely aligns with the core principles of CBT. Yet, the breadth of Appelbaum's definition presented problems for researchers in the field who subsequently developed psychodynamic or psychoanalytic-specific definitions of the construct (Nyklicek & Denollet, 2009). Psychodynamic definitions of psychological mindedness emphasise a client's ability to identify defence mechanisms, and take an analytical stance towards conflict and problems (McCallum & Piper, 1990; 1996).

Despite attempts at specific definitions, the abstract nature of the psychological mindedness construct makes its measurement difficult. A number of self-report questionnaires have been developed to measure psychological mindedness. The Psychological Mindedness (PM) scale (Conte et al., 1990; Conte, Ratto, & Karasu, 1996) has been most widely used in psychological mindedness literature despite poor test-retest reliability and questionable validity (McCallum & Piper, 1996). The Balanced Index of Psychological Mindedness (BIPM; Nyklicek & Denollet, 2009; Nyklicek, Poot, & van Opstal, 2010) was recently developed following the publication of theoretical models of psychological mindedness. These models attempt to clarify the construct (Hall, 1992) and return to more original and less specifically psychodynamic definitions of psychological mindedness (Grant, 2001). While the psychometric properties of the BIPM have been reported, studies have not been conducted outside the initial development group. Researchers have also used video-taped patient-therapist scenarios and recorded responses to these scenarios according to levels of psychological mindedness (the Psychological Mindedness Assessment Procedure [PMAP]; McCallum & Piper, 1990). The reliability of this procedure is poor, and clinical utility is low given the onerous nature of the task.

Despite the difficulties of varied methods of measurement and the diverse samples used, a large body of literature has investigated the relationship between psychological mindedness and treatment response. Research has shown that psychological mindedness is related to psychodynamic treatment engagement (Beitel, Ferrer, & Cecero, 2004; McCallum & Piper, 1990; McCallum, Piper, Ogrodniczuk, & Joyce, 2003), retention (Conte et al., 1990; Conte et al., 1996; McCallum & Piper, 1990), and outcome (Conte et al., 1990; Conte et al., 1996; McCallum & Piper, 1996). Psychological mindedness has also been used to reflect suitability for psychodynamic therapy (Conte et al., 1990; McCallum et al., 2003).

While some mixed findings exist (Kernberg et al., 1972; McCallum, Piper, & O'Kelly, 1997; Nyklicek, Majoor, & Schalken, 2010) this may be the result of variations and

limitations in the measurement of the psychological mindedness construct, poor statistical power, and the introduction of error as a result of the varied problems being addressed by clients within and across studies (McCallum et al., 2003). Nevertheless, psychological mindedness research demonstrates that pre-treatment attitudes consistent with psychodynamic therapy impact response to psychodynamic treatment. Importantly, equivalent empirical data for CBT is lacking.

One reason for the lack of empirical investigation of psychological mindedness within CBT may be due to the historically psychodynamic operationalisation of the psychological mindedness construct. While recent definitions and theoretical models of psychological mindedness have returned more closely to Appelbaum's original definition (Grant, 2001; Hall, 1992), measurement tools for the construct still fail to represent the cognitive component of Appelbaum's early definition (Beitel et al., 2004), something fundamental to CBT (see Nyklicek & Denollet, 2009 and Nyklickek, Poot, & van Opstal, 2010 for a contemporary measure of psychological mindedness named the Balanced Index of Psychological Mindedness). Furthermore, the limited research that has been conducted within CBT suggests that even contemporary measures of psychological mindedness have limited success for predicting CBT outcome (Nyklicek, Majoor, & Schalken, 2010). Researchers have suggested that measurement tools should be developed that reflect the underlying assumptions of CBT and assess pre-treatment CBT skills (McCallum & Piper, 1990). A measure of pre-treatment CBT-like attitudes would address this recommendation.

In addition to these research endeavours that indicate matching clients to treatment is an important area of investigation, recent research suggests that CBT therapists agree. A study conducted by Frei and Peters (in press) found that the majority of recruited psychologists practicing CBT considered the match between a client's broad attitudes prior to treatment and CBT principles to be an important determinant of eventual improvement. Along with factors traditionally identified in predictor research, for example, motivation and expectancy for

change, clinicians considered a willingness to experiment with new ways of thinking and behaving, an ability to acknowledge alternative viewpoints, and awareness of emotions as particularly important pre-treatment CBT-like attitudes and skills. This research supports the suggestion that pre-treatment attitudes that are aligned with CBT principles, components, or skills may be linked to CBT response. Empirically examining the relationship between pre-treatment CBT-like attitudes and treatment outcome rests on the development of an effective measurement tool for assessing the match between pre-treatment attitudes and CBT.

Existing Research Measuring a Client's Match to CBT

The author is aware of only one procedure that attempts, in part, to determine the pre-treatment match between clients and important therapy skills. Research by Safran, Segal, Shaw, and Vallis (1990) provides a broad approach for determining suitability for therapy, specifically cognitive therapy. Safran and colleagues (1990; 1993) developed the Suitability for Short-term Cognitive Therapy (SSCT) interview procedure that provides a system for clinicians to gather and score information about a client in order to determine their suitability for cognitive therapy. In addition to predictors of outcome that have been investigated in the literature, like therapeutic alliance, and symptom severity, Safran and colleagues examined additional domains that could contribute to suitability for therapy, including a client's use of self-protective strategies as a reflection of psychopathology, their attitudes towards change, recognition of the importance of the tasks of cognitive therapy, their ability to access automatic thoughts, and their capacity to be aware of and differentiate emotions in relation to their presenting problem. The latter two domains (the ability to access automatic thoughts and be aware of and differentiate emotions) represent a client's pre-treatment match with particular therapy components. However, the tool required that clinician's screen for these pre-treatment CBT skills in relation to the presenting problem, which suggests the procedure represents another method of determining symptom or pathology-related predictors of outcome. Furthermore, the relevant CBT skills were identified amongst many other factors, so

the SSCT cannot be considered to reflect a pre-treatment measure of CBT-like attitudes. Yet, the procedure indicates that a client's match to treatment can be assessed prior to therapy.

Scores on the SSCT have been associated with greater symptom reduction (Safran et al., 1993) and have been found to predict symptom change (Myhr, Talbot, Annable, & Pinard, 2007) following treatment. Lower SSCT scores have also been found to predict lower therapeutic alliance but not treatment outcome (Dunn, Morrison, & Bentall, 2006). Overall, limited research has been conducted using this method of determining suitability for, and match with, cognitive therapy. One possible explanation for the limited research is the reliance on clinician interaction, which is costly in research. Furthermore, the reliance on clinical interview, although structured and guided by a manual, may be influenced by procedures already used by clinicians to determine suitability for therapy rather than empirical data (Baker & Neimeyer, 2003), for example, clinical experience or a "gut feeling" (Myhr et al., 2007). Another potential explanation for the limited research may be that some of the factors assessed using Safran and colleagues' (1993) procedure can already be examined using self-report tools (e.g., motivation for change or therapeutic alliance). Preliminary findings demonstrating the association between Safran's suitability scores and therapeutic alliance suggest that the tool offers limited utility over and above existing self-report measures. Alternative measures of treatment suitability are necessary (Federici et al., 2010).

While the reviewed literature supports the suggestion that pre-treatment CBT-like attitudes may predict treatment outcome or determine suitability for CBT, it also highlights the lack of existing methods for measuring pre-treatment CBT-like attitudes. Therefore, a clear gap in existing research has been identified. The first step in investigating whether broad pre-treatment CBT-like attitudes predict CBT outcome or determine suitability for CBT will involve developing and validating a self-report instrument that measures pre-treatment CBT-like attitudes and reflects the degree to which an individual's underlying beliefs are philosophically aligned with the principles and skills of CBT. Once a psychometrically sound

measure of pre-treatment CBT-like attitudes has been developed, research investigating this factor as a predictor of CBT outcome can take place.

Developing a measure of pre-treatment CBT-like attitudes requires an understanding of the therapeutic framework of CBT. The next section of this review outlines the underlying principles of CBT and common CBT skills which would form the basis of a comprehensive assessment of CBT-like attitudes.

Definition of Pre-treatment CBT-like Attitudes

Models of the maintenance of many psychological disorders emphasise the role of maladaptive beliefs and behaviours (Panic Disorder, Clark, 1986; Rapee, 1993; Social Anxiety Disorder, Clark & Wells, 1995; Rapee & Heimberg, 1997; GAD, Wells, 1995; PTSD, Ehlers & Clark, 2000; Depression, Beck, 1967). Following from these models, CBT aims to a) help clients to develop insight into their maladaptive beliefs and behaviours, and b) develop skills to change their beliefs and behaviours (Jarrett, Vittengl, Clark, & Thase, 2011). In order to meet the two primary aims of CBT (i.e., to build awareness and skill development) treatment is particularly focused on building insight and skills to address beliefs that lead to and maintain unwanted symptoms and distress. Specifically, CBT aims to build an awareness of and ability to alter the relationship between maladaptive thinking, emotions, and behaviour to reduce unwanted symptoms and distress (Dobson & Dozois, 2010). While not unanimous (see Dobson & Dozois, 2010 for a review) many researchers agree that the most fundamental principle of CBT is the assumption that thoughts play a crucial role in determining behaviour and influencing emotional processes, such that disturbance is considered to primarily result from, and be maintained by, maladaptive automatic thinking (Carter, Forys, & Oswald, 2008; Dobson & Dozois, 2010; Reinecke & Freeman, 2003). Another important principle of CBT, particularly for treatment of anxiety disorders, is learning by practical experience.

A review of CBT protocols for many disorders (Allen, McHugh, Barlow, 2008; Antony & Roemer, 2003; Carter et al., 2008; Craske & Barlow, 2008; Dobson & Dozois,

2010; Franklin & Foa, 2008; Reinecke & Freeman, 2003; Resick, Monson, & Rizvi, 2008; Tarrier, 2008; Turk, Heimberg, & Magee, 2008; Young, Rygh, Weinberger & Beck, 2008) and questionnaires that measure compliance with therapy skills following treatment (Jacob, Christopher, & Neuhaus, 2011; Jarrett et al., 2011) provides information about the primary components and skills of CBT. Typically these sources suggest that CBT involves monitoring and developing awareness and expression of thoughts, feelings, and responses; challenging and evaluating thoughts and beliefs; developing flexibility and objectivity in thinking; experimenting and learning from behaviour and experiences; and, an understanding of the important role of thinking in facilitating changes to behaviour, emotions, and other responses (e.g., physiological or attention processes). A comprehensive measure of pre-treatment CBT-like attitudes would assess attitudes that align with these treatment components and skills.

Pre-treatment CBT-like attitudes can be defined as broad attitudes, prior to therapy, which align with the principles of therapy and common components of CBT. These attitudes reflect a philosophical match between an individual's pre-treatment mindset or beliefs and CBT principles or skills. Importantly, pre-treatment CBT-like attitudes measure broad attitudes that reflect underlying beliefs or perspectives that are not rated in relation to specific symptoms or distress. Therefore, an important aspect of the definition of pre-treatment CBT-like attitudes is that they are broad rather than symptom-focused. Furthermore, it is possible for an individual to hold broad attitudes that align with CBT principles and skills, but still report symptoms. In this instance the individual may not be able to relate or apply their broad CBT-like attitudes to their presenting problem or symptoms so the symptoms remain. For example, an individual may be of the general opinion that thoughts lead to emotions yet may be unable to see the link between a thought about being evaluated negatively by others and their subsequent experience of social anxiety. Ultimately, CBT-attitudes rated in relation to symptoms might be considered to reflect level of symptomatology or psychopathology, whereas broad attitudes without reference to disorder or symptoms reflect an underlying

mindset that aligns with CBT. CBT-like attitudes therefore are not considered to reflect degree of psychopathology or symptom severity and are intended to assess broad rather than symptom-focused attitudes that are, nonetheless, consistent with CBT.

Another important aspect of broad pre-treatment CBT-like attitudes is that they could be measured at both a personal and general level. A comprehensive assessment of pre-treatment CBT-like attitudes would involve assessing both the degree to which an individual's own attitudes align with CBT as well as their general awareness of CBT-like attitudes. For example, individuals may differ in a) the degree to which they personally hold attitudes that reflect CBT, as well as b) their ability to identify that others hold attitudes that match with CBT skills. Measuring CBT attitudes from these two standpoints is important in order to thoroughly assess CBT-like attitudes prior to therapy.

As a result, it will be important to ensure that the measurement of pre-treatment CBT-like attitudes reflect broad pre-treatment attitudes that are consistent with CBT but are not symptom-related. Additionally, a comprehensive assessment of CBT-like attitudes should include the measurement of both a personal agreement with CBT-like attitudes as well as a general awareness of CBT attitudes.

Ultimately, pre-treatment CBT-like attitudes represent a potential predictor of CBT outcome that has important implications for clinical practice and improving treatment outcome for more clients. Developing a psychometrically sound measure of pre-treatment CBT-like attitudes is a vital preliminary step before pre-treatment CBT-like attitudes can be investigated as a predictor of CBT outcome.

Summary

CBT has been established as an empirically supported treatment for a range of disorders. When samples of client's are studied, CBT has been reported as both efficacious and effective. Despite this, many individuals dropout of treatment or continue to experience symptoms following therapy. As a result, an important area of clinical research involves

identifying predictors of CBT outcome, particularly those that can be used to influence therapy selection or delivery in meaningful ways and therefore improve treatment response for more clients. However, a review of research that examines predictors of treatment indicates that there has been limited success identifying consistent predictors of CBT outcome beyond symptom severity and disorder characteristics, which are factors already used by clinicians to select treatment. One promising domain of individual difference predictors of CBT outcome includes attitude differences that relate to potential obstacles to therapy. Yet, these attitude differences are typically rated with specific reference to symptom change so represent symptom-focused attitude differences. Inconsistent findings with respect to current attitude differences predicting outcome may be a result of the narrow and symptom-specific focus of treatment-interfering (or alternatively, treatment-aligned) attitudes that have been investigated. Examining broader attitudes that similarly reflect potential obstacles to therapy, or alternatively represent a particular attitudinal match with therapy, but do not specifically represent symptom-focused attitudes, is therefore an important area for research. One strategy for assessing broad individual differences in pre-treatment attitudes is to investigate the degree to which an individual's pre-treatment mindset aligns with the principles and skills of CBT. While a number of research areas suggest that broad pre-treatment CBT-like attitudes represent a possible predictor of CBT outcome, a specific measurement tool that would enable the assessment of pre-treatment CBT attitudes does not exist.

Overview of the Current Thesis

Across a number of empirical studies this thesis aims to develop and investigate the psychometric properties of an instrument that measures pre-treatment broad attitudes that are consistent with the principles and skills of CBT, i.e., pre-treatment CBT-like attitudes. The first paper, presented in Chapter 2, presents two empirical studies that report on the initial development and refinement of a measure of pre-treatment CBT-like attitudes named the Skills Used In Therapy Survey (SUITS), the factor structure of the survey's two scales across

an undergraduate and community sample as well as the construct, criterion, and incremental validity of the SUITS. The aim of the second and third papers, presented in Chapter 3 and 4 respectively, is to further investigate the reliability and validity of the SUITS in additional samples. The second paper reports on the construct validity of the SUITS with respect to adaptive cognitive constructs, like need for cognition and cognitive flexibility as well as verbal intelligence. The third paper reports on the test-retest reliability of the SUITS over a brief interval, the construct validity of the SUITS with respect to social desirability, and the concurrent criterion validity of the SUITS in relation to clinician ratings of CBT-like attitudes in a short videotaped discussion about a difficulty. The aim of the fourth paper, presented in Chapter 5, is to replicate the factor structure of the SUITS within its intended sample; individuals at the early stages of seeking treatment. Building on previous papers the aim of the fifth paper, presented in Chapter 6, is to investigate the validity of the SUITS within a clinical sample of adults receiving CBT. In particular, the fifth paper reports on the SUITS as a predictor of CBT engagement and outcome both in isolation and as a predictor over and above existing but symptom-focused attitudes aligned with treatment, like motivation for change, expectancy for change, and treatment credibility.

To summarise, the current thesis contributes to the existing body of literature by developing and evaluating the psychometric properties of a new measure to assess broad pre-treatment attitudes that are consistent with the principles and skills of CBT in order to investigate whether broad pre-treatment CBT-like attitudes predict CBT outcome.

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Chapter 2

Measuring pre-treatment attitudes matched with cognitive behavior therapy – The Skills Used in Therapy Survey.

This chapter has been prepared for submission to Assessment.

Author contribution:

Mrs. Lauren McLellan was solely responsible for the development of the construct and measurement tool, design of the research, collection and entry of data, and the analysis and write-up of this paper. Dr. Peters and Professor Rapee provided research supervision and were involved in the consultation stages of ensuring the content validity of the developed measurement tool.

Measuring pre-treatment attitudes matched with cognitive behavior therapy – The Skills Used in Therapy Survey.

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Abstract

A short self-report measure of the match between client pre-treatment attitudes and Cognitive Behavior Therapy (CBT) skills was developed and named the Skills Used In Therapy Survey (SUITS). The SUITS consists of two scales that measure attitudes that reflect a personal agreement with (SUITS Self), and general awareness of (SUITS General), CBT skills and principles. The scales assess underlying beliefs or a philosophical mindset that broadly aligns with the therapeutic framework and skills of CBT. Preliminary psychometric properties of the newly developed tool were investigated separately in an undergraduate university sample (Study One, $N = 261$) and a community sample (Study Two, $N = 397$). Exploratory and confirmatory factor analyses indicate a strong second order (total score) and three factor structure for both the SUITS Self and General. Adequate to good internal consistency and promising evidence for the construct, criterion, and incremental validity of the SUITS was found across the two studies in relation to measures of psychopathology, therapy skills, general adaptive functioning, and treatment credibility. Results suggest that the SUITS is a short self-report tool with good psychometric properties and high research and clinical utility that may be used to investigate whether individual differences in CBT-like attitudes prior to therapy predict treatment outcome.

Scale development, treatment outcome, individual differences, cognitive behavior therapy

Measuring pre-treatment attitude match with cognitive behavior therapy – The Skills Used in Therapy Survey.

Extensive investigation has found cognitive behavior therapy (CBT) to be an efficacious treatment for a range of psychological disorders, with moderate to large effect sizes being found when CBT is compared to no treatment, alternative treatment or routine care (Butler, Chapman, Forman, & Beck, 2006). Despite strong efficacy results, drop-out rates (Salmoiraghi & Sambhi, 2010) and levels of clinically significant change (Borkovec, Newman, & Castonguay, 2004) indicate that CBT is not equally effective for all. As a result, researchers strive to investigate factors that predict individual differences in response to CBT. The goal of this research is to identify important factors that can be addressed prior to the commencement of CBT, allow modifications to be made to standard CBT protocols for some clients, or provide information about suitability for CBT.

Research that has focused on identifying differences between individuals that might explain variable response to CBT has focused predominantly on investigating demographic and disorder characteristics (e.g., Keeley, Storch, Merlo, & Geffken, 2008; Lincoln et al., 2005). Even within this narrow conceptualization of differences that may exist between clients, research has been fraught with methodological limitations and inconsistent results (Hamilton & Dobson, 2002; Keeley et al., 2008; Steketee & Chambless, 1992). Overall, disorder severity and comorbidity appear to be the most consistent client-related predictors of CBT outcome across a range of psychological disorders (Eskildsen, Hougaard, & Rosenberg, 2010; Keeley et al., 2008; Solvason, Ernst, & Roth, 2003). Yet, clinicians already use disorder to determine treatment selection for clients (Norcross & Wampold, 2011), therefore limiting the usefulness of this factor in assisting efforts to improve treatment outcome for more clients. At best, researchers have suggested that extending the length of treatment may be warranted for individuals with greater pre-treatment symptom severity (Hamilton & Dobson, 2002). Although limited in scope, researchers have attempted to identify other individual differences

that can be modified before treatment in order to improve treatment response for more clients. For example, some research has focused on attitude differences between clients (Keeley et al., 2008).

Attitude differences between clients that have been investigated as possible predictors of outcome include expectancy and motivation for change, as well as attitudes about symptom change as a result of the presented treatment (i.e., treatment credibility). These attitude predictors provide prognostic information about treatment response because they reflect a match, or alternatively, potential obstacles to treatment. For example, high levels of expectancy and motivation for symptom change are required to engage with the often aversive components of exposure involved in CBT for anxiety disorders (Rodebaugh, Holaway, & Heimberg, 2004; Smith, Norton, & McLean, 2012). Although determining an individual's attitudinal match with treatment the attitudes measured are symptom focused and specifically assess attitudes about symptom change in general (e.g., expectancy and motivation for change) or symptom change as a result of the presented treatment (e.g., treatment credibility). While these attitude differences between clients have at times been related to treatment outcome (Abramowitz, Franklin, Zoellner, & Di Bernardo, 2002; Addis & Jacobson, 2000; Ahmed & Westra, 2008; Borkovec, Newman, Pincus, & Lytle, 2002; Constantino, Arnkoff, Glass, Ametrano, & Smith, 2011; de Haan et al., 1997; Fennell & Teasdale, 1987; Glass, Arnkoff, & Shapiro, 2001; Hellstrom & Ost, 1996; Keeley et al., 2008; Keijsers, Hoogduin, & Schaap, 1994a, 1994b; Keijsers, Kampman, & Hoogduin, 2001; Kirsh & Henry, 1977; Ost, Stridh, & Wolf, 1998; Price, Anderson, Henrich, & Rothbaum, 2008; Safren, Heimberg, & Juster, 1997; Smeets et al., 2008; Steketee et al., 2011) results have also been mixed (Borkovec & Mathews, 1988; Borkovec et al., 2002; Chambless, Tran, & Glass, 1997; Devilly & Borkovec, 2000; Kampman, Keijsers, Hoogduin, & Hendriks, 2008; Keijsers, Hoogduin, & Schaap, 1994b; Price et al., 2008; Safren et al., 1997; Smith et al., 2012; Vogel, Hansen, Stiles, & Gotestam, 2006; Wolk & Devlin, 2001). Perhaps investigating attitudes that

go beyond an individual's symptoms or attitudes about symptom change would lead to more consistent results and provide information distinct from symptom severity, the current best predictor of treatment outcome.

Importantly, individuals whose mindset or attitudes are philosophically aligned with the therapeutic framework of CBT (e.g., the causal relationship between thoughts and emotions and behavior) may be expected to engage or respond better to CBT. Individual differences in pre-treatment CBT-like attitudes therefore represent a broad attitude factor that may predict treatment outcome or determine suitability for CBT.

CBT-like attitudes are broad attitudes that are not symptom focused. As a result, CBT-like attitudes should be distinct from symptom severity but still represent a mindset aligned with treatment. For example, an individual whose mindset aligns with the principles and skills of CBT may not necessarily be relating these to their presenting problem, so would still report symptoms, but they may be expected to more effectively engage in therapy and/or report better CBT outcome than those whose mindset or attitudes differ from the CBT framework. Furthermore, individuals may differ in their general awareness of CBT-like attitudes, just as they may differ in the degree to which they personally hold attitudes that reflect CBT. For example, an individual may be able to identify that others hold attitudes that match with CBT skills but not necessarily personally hold or abide by CBT-like attitudes. As a result, a comprehensive assessment of pre-treatment CBT-like attitudes would involve assessing both an individual's general awareness of CBT-like attitudes as well as the degree to which their own attitudes align with CBT.

A number of research findings support the suggestion that broad pre-treatment attitudes aligned with CBT might be expected to predict CBT outcome. Research suggests that effective therapy capitalizes on a client's pre-existing strengths rather than compensates for deficiencies, so clients matched to therapy improve more (Baker & Neimeyer, 2003; Beutler et al., 1991; Beutler, Harwood, Kimpara, Verdirame, & Blau, 2011; Beutler,

Machado, Engle, & Mohr, 1993; Elkin et al., 1999; Kadden, Cooney, Getter, & Litt, 1989; Kocsis et al., 2009; Rude, 1986; Rude & Rehm, 1991; Simons, Lustman, Wetzel, & Murphy, 1985; Sotsky et al., 1991; van Doorn, McManus, & Yiend, 2012).

Furthermore, recent research suggests that experienced CBT clinicians support this contention. For example, in a survey of psychologists practicing CBT, the majority rated the match between a client's broad attitudes, or mindset prior to treatment, and CBT principles as an important determinant of improvement following treatment (Frei & Peters, in press). Specifically, clinicians considered a willingness to experiment with new ways of thinking and behaving, an ability to acknowledge alternative viewpoints, and awareness of emotions as particularly important pre-treatment CBT-like attitudes and skills.

Additionally, the construct of psychological mindedness has been traditionally operationalized to represent a pre-treatment measure of the skills necessary to engage in psychodynamic therapy, for example, the ability to identify defense mechanisms (McCallum & Piper, 1990; 1996). Psychological mindedness has been used with some success to determine treatment engagement (Beitel, Ferrer, & Cecero, 2004; McCallum & Piper, 1990; McCallum, Piper, Ogrodniczuk, & Joyce, 2003), retention (Conte, Plutchik, Jung, Picard, Karasu, & Lotterman, 1990; McCallum & Piper, 1990) and outcome (Conte et al., 1990; McCallum & Piper, 1996) for psychodynamic therapy. Recently, less specific psychodynamic definitions of the construct have emerged (Grant, 2001), as have measures that assess levels of reflection on internal processes (Nyklicek & Denollet, 2009; Nyklicek, Poot, & van Opstal, 2010). However, researchers have reported limited success using psychological mindedness to predict CBT outcome (Nyklicek, Majoor, & Schalken, 2010) and have suggested that measurement tools should be developed to more specifically assess pre-treatment CBT skills (McCallum & Piper, 1990). Psychological mindedness research suggests that reflection and insight provide an important, but incomplete method of matching clients to contemporary efficacious treatments like CBT. However, psychological mindedness research provides

further support for the idea that skills fostered in, and necessary for engaging in, treatment can be measured prior to commencing therapy in order to determine a client's general attitudinal match with treatment.

Overall the research outlined above lends support to the idea of measuring the match between broad (i.e., not symptom-focused) pre-treatment attitudes and the skills necessary to engage in CBT. If broad pre-treatment CBT-like attitudes predict treatment outcome, this would provide an avenue for improving CBT treatment outcome by determining pre-treatment suitability for CBT, or alternatively identifying the need for preparatory work or modifications to standard CBT protocols. Therefore, pre-treatment CBT-like attitudes represent a potential predictor of CBT outcome that has important implications for clinical practice and ultimately improving treatment outcome for more clients. However, no self-report measurement tool of pre-treatment CBT-like attitudes currently exists.

Overall Paper Aims

The aim of this paper was to develop and present preliminary psychometric properties of a short self-report instrument, named the Skills Used In Therapy Survey (SUITS), containing two scales that measure a) personally held CBT-like attitudes prior to treatment (SUITS Self), and b) pre-treatment awareness of CBT skills, for example, that others may hold attitudes that align with CBT skills (SUITS General). Although intended for use in clinical samples prior to treatment, collecting a clinical sample large enough to conduct scale development research was not feasible. As a result, this paper presents two preliminary studies that were conducted to develop and investigate the psychometric properties of the SUITS in nonclinical samples. The focus of Study One was on developing the SUITS, investigating the factor structure of the new scales, assessing their internal consistency, and determining the demographic correlates and general construct validity of the SUITS in a large undergraduate sample. Study Two focuses on replicating the factor structure of the SUITS via confirmatory factor analysis, further assessing the demographic correlates and general

construct validity of the scales as well as exploring the criterion and incremental validity of the tool in a community sample. The focus of validity investigations across both studies will be on examining the relationship of the SUITS with general measures of psychopathology and adaptive constructs (either reflecting therapy skills or general adaptive functioning).

Study One

Research has, at times, found that gender (Foa et al., 1983; Herbert et al., 2005; McEvoy, 2007; Spek, Nyklicek, Cuijpers, & Pop, 2008), age (Morrison et al., 2012), socioeconomic status or income (Buchanan, Meng, & Marks, 1996; Falconnier, 2009; Steketee, 1993), and martial status (Rufer et al., 2005) predict treatment outcome. However, reviews that have focused on summarizing studies of CBT outcome across a range of disorders indicate that the weight of evidence suggests demographic variables do not predict treatment response (Eskildsen et al., 2010; Hamilton & Dobson, 2002; Keeley et al., 2008; Watson & Nathan, 2008). A measure of CBT attitudes would therefore not be expected to be influenced by demographic differences between individuals.

The SUITS Self and SUITS General have been developed to measure broad rather than symptom-focused pre-treatment attitudes that reflect CBT skills and principles. It is therefore important that the construct validity of the survey be determined in relation to measures of psychopathology (symptoms) and constructs that represent general therapy skills or adaptive functioning. Demonstrating that the SUITS measure CBT-like attitudes that are adaptive, but distinct from psychopathology or symptom severity, is important for two reasons. First, this will demonstrate that the SUITS is measuring broad rather than symptom-focused attitudes and secondly, it increases the probability that the SUITS will provide additional value in attempts to predict CBT outcome or determine suitability for CBT over and above the most consistent predictor, symptom severity.

Investigating the relationship between the SUITS and severity of psychopathology, for example, depression or anxiety symptoms, is therefore important. Furthermore, the

personality domain of emotional stability or neuroticism is defined as the tendency to experience psychological distress. Research suggests that emotional stability has been associated with psychopathology (Clark, Watson, & Mineka, 1994; Watson, Clark, Carey, & 1988), and in general is considered to represent proneness for experiencing negative affect (Costa & McCrae, 1992). As measures reflecting psychopathology, depression, anxiety, and emotional stability would not be expected to correlate with SUITS scores.

Additionally, examining the association between the SUITS and a range of constructs considered to reflect therapy skills and general adaptive functioning is important in establishing the construct validity of the survey. The personality domain of openness to experience is thought to measure general intellectual curiosity, behavioral flexibility (Costa & McCrae, 1992) and a willingness to experiment in the cognitive and emotional domains (Muten, 1991). Importantly, this domain of personality is likely to represent attitudinal agreement with CBT skills so a positive correlation would be expected between this adaptive personality domain and CBT-like attitudes. General measures of psychological mindedness typically measure insight and level of internal reflection. Insight and reflection skills can be considered adaptive and have been empirically positively related to general well-being (Trudeau & Reich, 1995) or general distress (Beitel, Ferrer, & Cecero, 2005). Furthermore psychological mindedness scores represent skills required to engage in psychotherapy generally, of which CBT is one specific variant. Although research suggests that general psychotherapy skills do not predict CBT outcome, general psychotherapy skills would be expected to form part of the measurement of the skills required to engage in CBT. Positive associations would therefore be expected between these constructs reflecting therapy skills and scores on the SUITS.

Trait emotional intelligence and task-focused coping are two constructs considered to reflect general adaptive functioning. Contrary to its label, trait emotional intelligence is thought to be distinct from cognitive ability or intelligence per se, but is considered to reflect

trait-like self-perceptions of emotional competence (Cooper & Petrides, 2010; Petrides & Furnham, 2001). Trait emotional intelligence has been conceptually (Cooper & Petrides, 2010; Petrides & Furnham, 2001) and empirically (Bastian, Burns, & Nettelbeck, 2005) associated with adaptive functioning and response to stressors (Ciarrochi, Deane, & Anderson, 2002). Research suggests that task-focused coping, defined as attempts to solve a problem, represents a general adaptive and healthy coping style (Endler & Parker, 1990; 1994; 1999; Endler, Parker, & Butcher, 1993). A positive association would therefore be expected between these adaptive constructs and scores on the SUITS.

Study One Hypotheses

It was expected that items from a larger initial pool would be reduced to return two short self-report scales, Self and General. It was hypothesized that the scales would have high levels of internal consistency based on the resulting factor structure. With regard to the construct validity of the SUITS, it was expected that the SUITS would be unrelated to demographic variables (age, gender, education level) but may be associated with prior knowledge of therapy. The discriminant construct validity of the SUITS was expected to be demonstrated by nonsignificant correlations with depression, anxiety, and emotional stability. The convergent construct validity of the SUITS was expected to be demonstrated by significant correlations with constructs reflecting therapy skills (the personality domain Openness to Experience and psychological mindedness) and adaptive constructs (task-focused coping and emotional intelligence).

Method

Defining the Construct, Item Construction and Selection

The primary aim of developing a new tool was to measure pre-treatment attitudes that align with the therapeutic framework and skills of CBT; CBT-like attitudes, in order to determine a client's likely ability to engage with and respond to CBT or measure suitability for CBT. The instrument was named the Skills Used In Therapy Survey (SUITS). Given that

individuals may be able to identify that others hold attitudes that match with CBT but not necessarily personally hold attitudes that reflect CBT skills, two separate scales were developed. The SUITS Self aimed to measure the match between personally held attitudes and CBT skills. The SUITS General aimed to measure general awareness of CBT-like attitudes and the ability to identify that others hold attitudes that align with CBT.

A number of strategies were employed in order to determine the common components of CBT and skills necessary to engage in CBT, which would then guide the construction of items for the SUITS. In depth interviews were conducted with experienced clinical psychologists specializing in CBT and CBT theory and treatment models or rationales were reviewed across a range of disorders (Allen, McHugh, & Barlow, 2008; Antony & Roemer, 2003; Carter, Forys, & Oswald, 2008; Craske & Barlow, 2008; Dobson & Dozois, 2010; Franklin & Foa, 2008; Reinecke & Freeman, 2003; Resick, Monson, & Rizvi, 2008; Tarrier, 2008; Turk, Heimberg, & Magee, 2008; Young, Rygh, Weinberger, & Beck, 2008). The consultation and review process identified a range of common CBT components and skills including: monitoring and developing awareness and expression of thoughts, feelings, and responses; challenging and evaluating thoughts and beliefs; developing flexibility in thinking; experimenting and learning from behavior and experiences; and, an understanding of the important role of thinking in facilitating changes to behavior, emotions, and other responses (e.g., physiological or attention processes).

To assist with constructing items, existing measures of related constructs were reviewed including the Dysfunctional Attitudes Scale (DAS; Weissman & Beck, 1978), the Constructive Thinking Inventory (CTI; Epstein, 2001), the Leahy Emotional Schemas Scale (Leahy, 2003), the Meta-Cognitions Questionnaire (MCQ-30; Wells & Cartwright-Hatton, 2004), the Problem Solving Inventory (PSI; Heppner, 1988), the Toronto Alexithymia Scale (TAS-20; Bagby, Parker, & Taylor, 1994), and the Ways of Coping Questionnaire (WCQ; Folkman & Lazarus, 1988). However, as almost all the measures reviewed related to

psychopathology, careful effort was made to ensure constructed items measured the identified CBT skills rather than psychopathology. No reference was made to "problems" or "symptoms" etc. within items or scale instructions in order to reduce the measurement of symptoms or symptom-focused attitudes by the SUITS.

An initial and large pool of items was generated to cover the identified common components and skills of CBT. Items were constructed to reflect self-statements and general statements representing the SUITS Self and General, respectively. Semantically similar items were screened from the initial pool by experts in scale development leaving 90 concise and direct items: 45-items for each scale.

In questionnaire format, items were listed randomly within each scale and responses were made on a five-point Likert scale ranging from 1 *(strongly disagree)* to 5 *(strongly agree).* Separate instructions were provided for each scale. Instructions for the SUITS Self required participants to respond according to how much they believed or agreed with the statement personally, or how much the statement was true of them. Instructions for the SUITS General required participants to respond according to how much participants believed or agreed that the statement was generally true regardless of whether it was true for them.

Five clinical psychologists individually reviewed all 90 items and selected from a list the components or skills of CBT (as listed above) they felt each item best reflected. Items that obtained less than 80% agreement among the experts regarding the aspect of CBT being measured were removed from the questionnaire, as was the conceptually similar item on the alternative scale. Revisions were also made to items based on comments provided by the panel. This process reduced the number of items in each SUITS scale to 31.

Participants

Two hundred and sixty one undergraduate students from Macquarie University participated in the study as part of a third year psychology course. Participants ranged in age from 18 to 55 years (M = 23.87 years, SD = 7.23) and 79% were female.

Measures

Psychological symptoms. All participants completed the 21-item Depression Anxiety Stress Scales (DASS-21; Lovibond & Lovibond, 1995). The depression and anxiety subscales were used as a measure of severity of depression and anxiety symptoms. The self-report items were rated using a four-point Likert scale reflecting the frequency of symptoms over the past week, ranging from 0 (*did not apply to me at all*) to 3 (*applied to me very much, or most of the time*). The DASS-21 subscales have good internal consistency in volunteer samples (Henry & Crawford, 2005), as reflected in the current sample (Depression: $\alpha = .91$ and Anxiety: $\alpha = .85$). Strong evidence of convergent and discriminant validity has also been reported in the literature (Crawford & Henry, 2003; Henry & Crawford 2005).

Personality. Participants completed the 50-item International Personality Item Pool (IPIP; Goldberg et al., 2006) as a measure of personality facets that reflect the Big Five personality domains (Goldberg, 1992). Participants responded to each item on a five-point Likert scale based on how much the statement typically described them ranging from 1 (*very inaccurate*) to 5 (*very accurate*). Subscale scores were calculated for Openness to Experience and Emotional Stability as a method of measuring therapy-like traits and psychopathology, respectively. Higher scores reflected higher endorsement of the respective personality domain. The IPIP has high internal reliability within student samples ($\alpha = .72$ to $\alpha = .90$) and evidence of construct validity when compared to common measures of personality (Gow, Whiteman, Pattie, & Deary, 2005). Cronbach alphas in the current sample were .79 for Emotional Stability and .89 for Openness to Experience.

Psychological mindedness. Participants completed the revised 21-item Balanced Index of Psychological Mindedness (BIPM; Nyklicek, Poot et al., 2010) as a measure of psychological mindedness, and in this study is considered to reflect general therapy skills. Participants rated how much each statement reflected them on a five-point Likert scale ranging from 0 (*not true*) to 4 (*very much true*). Items measured interest in one's internal

psychological states and processes, one's ability to reflect on internal phenomena, and the level of interest and insight into the psychological processes of others. A total psychological mindedness score was calculated, where higher scores reflected greater psychological mindedness. Adequate internal consistency has been reported for the BIPM (Nyklicek & Denollet, 2009; Nyklicek, Poot et al., 2010) and was $\alpha = .85$ in the current sample.

Emotional intelligence. In this study emotional intelligence is measured to reflect adaptive functioning. Participants completed the 30-item short form of the Trait Emotional Intelligence Questionnaire (TEIQue-SF version 1.50; Petrides & Furnham, 2006) by rating their level of agreement with each self-report item using a seven-point Likert scale ranging from 1 (*completely disagree*) to 7 (*completely agree*). A global trait emotional intelligence score was calculated by summing each item score, including 15 reverse scored items, and dividing by the total number of items. Higher scores reflected greater levels of global trait emotional intelligence. Unidimensionality and fair to good psychometric properties of the scale have been demonstrated for the short form of the TEIQue in nonclinical samples, with good internal consistency (between $\alpha = .88$ and $\alpha = .89$) and growing evidence of validity (Cooper & Petrides, 2010). The Cronbach alpha for the current sample was .92.

Coping. Participants completed the 48-item Coping Inventory for Stressful Situations (CISS; Endler & Parker, 1999) as a measure of coping styles in response to stressful situations. Items outline possible responses to stressful situations and participants rate the frequency of using each response according to a five-point Likert scale ranging from 1 (*not at all*) to 5 (*very much*). This study used the Task-Focused subscale of the CISS as a measure of coping that reflects adaptive functioning. The subscale score was calculated from the sum of 16-items, such that a higher score reflected greater use of task-focused coping in response to stressful situations. High internal consistency has been reported in volunteer adult and undergraduate samples and strong validity results have also been reported by the test

developers (Endler & Parker, 1999). The Cronbach alpha in this study was .92 for task-focused coping.

Demographic variables. Age, gender, and highest level of education were collected along with information about prior knowledge of CBT. Participants rated prior CBT knowledge on a five-point scale (*none, minimal, some, substantial* and *extensive*).

Procedure

The study procedures were approved by the Macquarie University Human Research Ethics Committee. Participants completed the SUITS and other measures on computer as part of a larger set of questionnaires. Responses were recorded online from private locations and the online survey was hosted by Survey Gizmo.

Results and Discussion

Approach to Exploratory Factor Analysis

The SUITS Self and SUITS General were constructed to measure personal and general CBT-like attitudes respectively. It was expected that responses could differ on the two scales; i.e., that individuals could respond differently regarding personally held attitudes compared to awareness of general attitudes. Furthermore, due to the matched items included in the two versions of the SUITS it was likely that correlations between responses to matched items would form the basis for a spurious factor structure if analyses were conducted for both scales together. As a result, the two SUITS scales were analyzed separately.

Despite the use of theory when generating items, there was no single pre-existing model or set of models that could be identified prior to investigating the factor structure of the scales. Therefore, exploratory factor analysis was performed to determine the factorial structure underlying the data. An intended by-product of this analysis was expected to be a reduction in the number of items in the scale, so several exploratory factor analyses were performed with items that were not good indicators of the obtained factor structure being excluded at each stage. With this kind of method the onus is on the researcher to show that the

final factor structure is not based on relationships with the specific sample, making subsequent confirmatory factor analysis an important part of the development process. Confirmatory factor analysis will be reported in Study Two of this paper.

An oblique rotation method (Direct Oblimin; delta = 0) and orthogonal rotation method (Varimax) revealed similar results. Results from the orthogonal rotation method will be reported for simplicity of interpretation. The Kaiser Measure of Sampling Adequacy (KMO) indicated that both SUITS scales were appropriate for factor analysis (Kaiser & Rice, 1974), KMO = .76 (Self) and KMO = .86 (General).

SUITS Self. Principal axis factoring using the 31 SUITS Self items resulted in eight factors with eigenvalues greater than one (7.5, 2.2, 1.8, 1.5, 1.3, 1.2, 1.1, 1.0). Examination of the scree plot suggested a three- or four-factor solution and Horn's parallel analysis (Horn, 1965) indicated a five-factor structure to be appropriate. Given that parallel analysis is generally considered a more accurate method of determining the appropriate number of factors to retain in an analysis but interpretability of solutions is also paramount (Dinno, 2009; Fabrigar, Wegener, MacCallum, & Strahan, 1999) three-, four- and five-factor structures were specified. A five-factor structure provided greatest interpretability. The rotated five-factor solution accounted for 31.9% of the variance. Items that loaded .4 or higher on a factor were retained and re-entered into another analysis. This procedure was repeated twice (excluding 10 and then three items from each analysis) until all items loaded onto a factor at the specified level. Of the 18 remaining items, one item was deleted due to cross loading at .4 on two factors. The final analysis with 17 items converged after seven iterations and resulted in a five-factor solution. The fifth factor was weak, consisting of only two items. The loading of these two items onto the factor may have occurred due to method effects (i.e., similar wording), so the two items and the fifth factor were removed from the scale. An item that had its highest loading with Factor 1 also had a cross loading (.396) on Factor 4. There was conceptual overlap between this item and both factors that was determined to be an

important element of CBT, so the item was retained on the factor with highest loading (Factor 1). The remaining four factor solution consisted of 15 items and represented the causal role of thoughts in driving behavior and feelings (Thinking), awareness and expression of thoughts and feelings (Insight), awareness of and the causal role of thinking in determining bodily sensations (Physiology), and flexibility and learning from behavior (Behavior). The four factors accounted for 39.4% of the variance; 19.2%, 9.1%, 6.3%, and 4.8% respectively. Factor loadings for items in the final scale are presented in Table 1.

SUITS General. Principal Axis Factoring using the 31 SUITS General items resulted in eight factors with eigenvalues greater than one (7.5, 2.1, 1.8, 1.5, 1.3, 1.2, 1.1, 1.0). Examination of the scree plot suggested a three- or four-factor solution and Horn's parallel analysis (Horn, 1965) indicated a three-factor structure to be appropriate. Similar to the SUITS Self, multiple analyses were performed, specifying a three-, four- and five-factor structure, to enable interpretability to also be considered. A five-factor structure provided greatest interpretability. The rotated five factor solution accounted for 36.3% of the variance. Items that loaded .4 or higher on a factor were retained and re-entered into another analysis. This procedure was repeated twice (excluding nine items and then four items from each analysis) until all items loaded onto a factor. In the third analysis one additional item failed to load onto any factor at the .40 level and the fifth factor consisted of only a single item. As a result these two items were deleted and a four-factor structure was specified. The final analysis with 16 items converged after six iterations and resulted in a conceptually meaningful four-factor solution. Like the SUITS Self the last factor was weak, consisting of only two items and so was removed from the scale. The remaining three-factor solution consisted of 14 items and represented the causal role of thoughts in driving behavior and feelings (Thinking), awareness and expression of thoughts and feelings (Insight), and flexibility and learning from behavior (Behavior). The three factors accounted for 41.0% of

the variance; 25.7%, 8.7%, and 6.6% respectively. Factor loadings for items in the final scale are presented in Table 2.

Table 1

Item-Factor Loadings for the Four Factor Structure of the Skills Used In Therapy Survey - Self

Questionnaire item	Thinking	Insight	Physiology	Behavior
If I change the way I think my emotions would be different	**.71**	-.01	-.08	-.08
If I change the way I think I would behave differently	**.67**	.07	.01	.01
I can change the way I feel about things by changing the way I think about them	**.57**	.14	.08	.27
The way I think about something influences what I do about it	**.44**	.21	.13	.14
I can change what I do in a situation by changing the way I think about it	**.49**	.09	-.02	.40
I put my feelings into words	.13	**.88**	-.04	-.00
I am able to be really aware of how I am feeling	.03	**.48**	.21	.30
I put my thoughts into words	.19	**.70**	-.05	.08
I identify my emotions	.06	**.42**	.10	.25
My bodily sensations (for example heart rate or sweating) are influenced by my thoughts	.24	-.01	**.57**	.08
I am aware of how my body reacts to things (for example heart beating or sweating)	-.04	.17	**.64**	.16
If I am thinking negatively my body reacts (for example increased heart rate or sweating)	.21	-.06	**.68**	-.08
I go and face up to things that are difficult	.10	.20	.02	**.41**
When good or bad events happen to me I get a chance to learn something	.07	.02	-.01	**.46**
I learn from what I do	.06	.07	.10	**.59**

Note. Values in bold represent the loading of the item onto its respective factor.

Table 2

Item-Factor Loadings for the Three Factor Structure of the Skills Used In Therapy Survey - General

Questionnaire item	Thinking	Insight	Behavior
The way people think about something will influence how they feel about it	**.42**	.21	.26
What people experience in their body (for example heart rate or sweating) would be different if they changed the way they thought about things	**.64**	.05	.07
If people change what they are thinking about something, they can change the way they feel about it	**.74**	.17	.04
If people change the way they think they would behave differently	**.54**	.02	.22
People can change what they do in a situation by changing the way they think about it	**.55**	.14	.26
Changing thoughts changes emotions	**.61**	.13	.10
Thoughts can be put into words	.08	**.61**	.16
Emotions can be identified	.10	**.74**	.23
It is possible for people to be really aware of how they are feeling	.23	**.54**	.11
Feelings can be put into words	.11	**.74**	-.02
Learning comes from doing	.06	.07	**.49**
It is good to go and face up to difficulties	.23	.10	**.60**
When good or bad events happen to people this gives them a chance to learn something	.08	.26	**.56**
Even though trying new things might be difficult it may mean things change for the better	.25	.03	**.54**

Note. Values in bold represent the loading of the item onto its respective factor.

Internal Consistency

Cronbach alphas for the SUITS Self were adequate to good for all but the Behavior factor (Total: α = .76; Thinking: α = .73; Insight: α = .75; Physiology: α = .67; and Behavior: α = .49). Cronbach alphas for the SUITS General were adequate to good (Total: α = .82; Thinking: α = .78; Insight: α = .78; and Behavior: α = .68).

SUITS and Demographic Variables

As expected, no significant correlations were found between age and any SUITS total or factor scores (SUITS Self correlations ranged from r (259) = -.05 to r = .11 and SUITS General correlations ranged from r = -.09 to r = .08; all ps > .05). Table 3 presents mean and standard deviations for SUITS Self and SUITS General total and factor scores by gender, level of education, and prior knowledge of CBT. Alpha was set at .05 for the independent sample t-tests and one way analysis of variance tests for SUITS Self and General total scores by gender, education, and CBT knowledge. However, Bonferroni adjusted alphas were used (α = .01 and α = .02 respectively) for analyses comparing SUITS factor scores given the four comparisons required for SUITS Self factor scores and three comparisons required for SUITS General factor scores. As hypothesized, no significant differences were found for any SUITS total or factor scores by gender or level of education. When investigating prior CBT knowledge, only one participant indicated that they had '*no knowledge*' of CBT and so were excluded from the analysis. Only two participants reported '*extensive knowledge*' of CBT (the highest rating) so this category was collapsed with the rating of "*substantial knowledge*" resulting in three categories. As expected, one way analysis of variance found a significant difference for SUITS Self total score and SUITS Self Insight factor across the levels of CBT knowledge (F(2, 257) = 6.36, p = .002; F(2, 257) = 5.83, p = .003 respectively). Three Tukey HSD follow-up comparisons were calculated for SUITS Self total and SUITS Self Insight scores with a Bonferroni adjusted alpha of .017. The follow-up comparisons indicated that participants with '*substantial or extensive'* prior knowledge of CBT scored significantly

higher on the SUITS Self total and SUITS Self Insight factor than participants with '*some*' prior knowledge of CBT (see Table 3). No significant main effects for CBT knowledge were found for the other SUITS Self factor scores or the SUITS General total and factor scores.

Construct Validity

Univariate descriptives were inspected for all variables. Transformations were performed for variables that were not normally distributed and are reported when they adequately corrected for normality and impacted the pattern of results. Table 4 shows the correlations between SUITS scores and depression, anxiety, emotional stability, openness to experience, psychological mindedness, emotional intelligence, and task-focused coping.

Psychopathology. Table 4 shows that, as expected, most correlations between psychopathology (depression, anxiety, and emotional stability) and SUITS Self and SUITS General total and factor scores were not significant, particularly for the SUITS General. Contrary to expectations, the SUITS Self Physiology factor was significantly positively correlated with depression and anxiety symptoms, and significantly negatively correlated with emotional stability. Additionally, although significant the SUITS Self Behavior factor was negatively correlated with psychological symptoms and positively correlated with emotional stability. All significant correlations were small, with the exception of the moderate correlation between Physiology and anxiety symptoms.

Therapy-like skills. Table 4 shows that, overall, hypothesized correlations were found between constructs considered to reflect therapy skills (Openness to Experience and psychological mindedness) and SUITS scores. The only exception was for the SUITS Self Physiology factor which again demonstrated a different and unexpected pattern of correlations. A nonsignificant correlation was found between the SUITS Self Physiology factor and Openness to Experience, the personality domain hypothesized to have the strongest association with CBT-like attitudes.

Table 3

Mean Skills Used In Therapy Survey Scores by Categorical Demographic Variables (SD in parentheses, N = 261)

	Total sample	Gender		Education			CBT Knowledge[a]		
		Males	Females	High school	Certificate or diploma	Bachelor degree or higher	Minimal	Some	Substantial or extensive
SUITS Self									
Total	58.15 (5.44)	57.52 (5.38)	58.31 (5.46)	57.99 (5.43)	58.44 (5.12)	58.97 (5.91)	58.16 (4.99)	57.22_a (4.95)	59.98_a (6.00)
Thinking	19.88 (2.34)	19.87 (2.17)	19.88 (2.39)	19.83 (2.38)	19.89 (2.52)	20.20 (1.97)	19.98 (2.07)	19.60 (2.29)	20.36 (2.50)
Insight	15.12 (2.52)	14.57 (2.56)	15.26 (2.50)	15.12 (2.58)	15.19 (2.17)	15.03 (2.48)	15.13 (2.29)	14.71_a (2.44)	15.95_a (2.63)
Physiology	11.40 (1.89)	11.20 (2.07)	11.45 (1.84)	11.38 (1.86)	11.33 (1.64)	11.63 (1.96)	11.49 (1.84)	11.21 (1.94)	11.73 (1.72)
Behavior	11.75 (1.56)	11.87 (1.86)	11.71 (1.48)	11.66 (1.60)	12.04 (1.13)	12.10 (1.61)	11.56 (1.71)	11.70 (1.39)	11.94 (1.76)
SUITS General									
Total	56.27 (4.98)	56.07 (5.01)	56.32 (4.99)	56.21 (5.05)	57.04 (4.28)	55.97 (5.22)	56.29 (4.93)	55.59 (4.74)	57.73 (5.32)
Thinking	23.70 (2.71)	23.74 (2.44)	23.70 (2.78)	23.64 (2.67)	24.15 (2.32)	23.73 (3.30)	23.82 (2.34)	23.32 (2.62)	24.45 (3.00)
Insight	15.95 (2.08)	15.85 (2.22)	15.98 (2.05)	15.93 (2.17)	16.26 (1.83)	15.87 (1.68)	15.76 (2.14)	15.83 (1.96)	16.33 (2.28)
Behavior	16.61 (1.79)	16.48 (1.87)	16.64 (1.78)	16.64 (1.87)	16.63 (1.47)	16.37 (1.52)	16.71 (1.66)	16.44 (1.85)	16.94 (1.73)

Note. Means in each row that share subscripts were found to be significantly different.

[a] $n = 260$.

Adaptive constructs. Table 4 shows that, as expected, positive significant correlations were found between SUITS Self and SUITS General total scores and both trait emotional intelligence and task-focused coping. Significant positive correlations were also found between emotional intelligence and SUITS Self and General Insight and Behavior factors but not Thinking factors or SUITS Self Physiology. Significant positive correlations were found between task-focused coping and SUITS Self and General Insight and Behavior factor scores. Neither the SUITS Thinking factors nor SUITS Self Physiology factor were positively and significantly correlated with task-focused coping.

In summary, correlations between measured constructs and the SUITS Behavior factors at times reflected a stronger association with psychopathology than was hypothesized; however, the results reflected the conceptual idea that SUITS scores should reflect adaptive, healthy functioning, i.e., the correlations were negative in direction for depression and anxiety and positive in direction for emotional stability. Results for SUITS Thinking factors were inconsistent, particularly regarding psychopathology symptoms and suggest that further investigation of the construct validity of this factor will be necessary. Therefore, the relationship between SUITS scores and psychopathology will be examined in Study Two using a community sample. Results for the SUITS Self Physiology factor consistently returned correlations contrary to hypotheses, suggesting that scores on this factor were associated with levels of psychological symptoms, specifically depression and anxiety, and emotional instability. These results indicate that the SUITS Self Physiology factor may not adequately represent adaptive CBT-like attitudes. Thus, the factor structure and construct validity of the SUITS without the Self Physiology factor was examined in Study Two.

Table 4
Correlations Between Skills Used In Therapy Survey Scores and Construct Validity Variables (N = 261)

Source	Depression[a]	Anxiety[a]	Emotional Stability	Openness to Experience	Psychological Mindedness	Trait emotional intelligence	Task-Focused coping
SUITS Self							
Total	-.01	.13*	.00	.44**	.40**	.27**	.24**
Thinking	.07	.13*	-.05	.26**	.16*	.04	.10
Insight	-.05	-.07	.01	.43**	.45**	.34**	.19*
Physiology	.21**	.45**	-.22**	.11	.13*	-.10	-.05
Behavior	-.28**	-.16**	.30**	.32**	.26**	.44**	.42**
SUITS General							
Total	.06	.10	-.05	.34**	.34**	.16*	.16*
Thinking	.11	.09	-.06	.20**	.20**	.08	.08
Insight	.02	.06	-.03	.37**	.31**	.17**	.08
Behavior	-.01	.06	-.01	.22**	.27**	.14**	.22**
M	9.93	9.25	32.13	37.72	60.59	4.99	58.55
SD	9.08	8.20	6.82	5.84	10.57	0.80	10.16

[a] a square root transformation was performed on this variable for the correlations.
* = $p < .05$, ** = $p < .01$

Study Two

The aim of Study Two was to further investigate the factor structure and validity of the SUITS, replicating results found in Study One within a community sample and extending investigation of the psychometric properties of the SUITS by examining its criterion and incremental validity. Research suggests that ratings of treatment credibility are, at times, important in determining response to CBT (Abramowitz et al., 2002; Addis & Jacobson, 2000; Ahmed & Westra, 2008; Borkovec et al., 2002; Devilly & Borkovec, 2000; Fennell & Teasdale, 1987; Safren et al., 1997; Smeets et al., 2008). Ratings of treatment credibility provide information about an individual's expectancy for symptom change via the described treatment. A common method of operationalizing treatment credibility in a nonclinical sample is to present participants with treatment scripts targeting hypothetical problems and collect credibility ratings of hypothetical symptom change via the described treatments (Deacon & Abramowitz, 2005; Nau, Caputo, & Borkovec, 1974; Wollersheim, McFall, Hamilton, Hickey, & Bordewick, 1980). In Study Two, treatment credibility was operationalized in this way in order to provide evidence of the validity of the SUITS as a measure that may reflect suitability for CBT compared to pharmacological treatments.

Research has previously been outlined that indicates symptom severity is one of the most consistent and strongest predictors of CBT outcome. Furthermore, the SUITS has been developed to minimize measurement of psychopathology and reflect broad rather than symptom-focused CBT-like attitudes. As a result, pre-treatment CBT-like attitudes, as measured by the SUITS, would be expected to demonstrate incremental validity with measures of psychopathology when predicting outcome or CBT credibility in a nonclinical sample.

Study Two Hypotheses

It was expected that confirmatory factor analysis, based on the exploratory factor analysis and modifications as a result of construct validity results found in Study One, would

demonstrate a strong fit for the data. Extending results from Study One, it was hypothesized that SUITS scores would be unrelated to demographic variables and severity of psychological symptoms, specifically depression and anxiety, in a community sample, thus demonstrating the discriminant construct validity of the newly developed instrument. It was expected that SUITS scores would be related to prior CBT knowledge. In addition, the criterion and incremental validity of the SUITS would be demonstrated using a measure of treatment credibility and measures of psychological symptoms, depression, and anxiety. It was hypothesized that SUITS scores would predict ratings of CBT credibility but would not predict ratings of credibility for pharmacological treatment. It was also hypothesized that SUITS scores would predict CBT credibility ratings over and above levels of depression and anxiety symptoms, providing evidence for the incremental validity of the SUITS.

Method

Participants

Participants were 397 community members who responded to advertisements posted around the university campus, on community notice boards, in stores at shopping centers, national newspaper advertisements, emails initially sent to university mailing lists and forwarded to any person over the age of eighteen, online community advertising sites, and via the Facebook networking site. Participants could elect to go into a monthly prize draw as an incentive for involvement in the study. Participants in the study ranged in age from 18 to 70 years with a mean age of 34.1 years (*SD* = 12.82) and 76.3% were female.

Measures

Pre-treatment CBT-like attitudes. The two scales of the Skills Used In Therapy Survey (SUITS) were used to measure personal (SUITS Self) and general (SUITS General) CBT-like attitudes. The SUITS Self consists of 13 statements where participants respond based on their level of personal agreement with each item (e.g., *"I put my thoughts into words"*). In addition to removing the Self Physiology items, suggested in Study One, an

additional item was added to the SUITS Self Behavior factor, "*Even though trying new things is difficult for me, it means things change for the better*", in an attempt to improve the internal consistency of this factor. The SUITS General consists of 14 statements where participants respond according to their general level of agreement regardless of whether the statement is true of them (e.g., "*Thoughts can be put into words"*). As a result of changes to the SUITS Self following results from Study One, both SUITS scales now measured three factors reflecting CBT-like attitudes (Thinking, Insight and Behavior). Participants used a five-point Likert scale ranging from 1 (s*trongly disagree*) to 5 (*strongly agree*) when rating items on both scales. Total and factor scores were calculated by summing responses to all relevant items, such that higher scores reflected greater general or personal CBT-like attitudes. Adequate reliability and initial promising evidence of the construct validity of the SUITS has been presented in Study One. Internal consistency of total and factor scores in the current sample ranged from $\alpha = .58$ to $\alpha = .79$ for SUITS Self and from $\alpha = .66$ to $\alpha = .86$ for SUITS General. See Appendix A for a copy of the SUITS.

Psychological symptoms. Participants completed the 21-item Depression Anxiety Stress Scales (DASS-21; Lovibond & Lovibond, 1995) as a measure of symptoms of depression and anxiety.

Treatment credibility. Participants were presented with two scripts used in the Treatment Perceptions Questionnaire (TPQ; Deacon & Abramowitz, 2005). The scripts describing psychological (CBT) and pharmacological treatments were presented to participants in a counterbalanced order. Participants rated the credibility of the CBT and pharmacological treatment scripts by responding to five items similar to those used by Borkovec and Nau (1972) in research using treatment scripts (how logical the treatment seemed, how confident they were that the treatment would eliminate the hypothetical problem, how confidently they would recommend the treatment to a friend, how willingly they would undergo the treatment should they experience the anxiety problem, and how

successful they felt the treatment would be at decreasing the problem). Responses were scored on a 10-point Likert scale from 1 (*not at all*) to 10 (*extremely*) and summed to provide a total score for each treatment where higher scores indicated greater credibility.

Demographic variables. Demographic variables were collected in line with those outlined in Study One.

Procedure

The study procedures were approved by the Macquarie University Human Research Ethics Committee. Participants completed the SUITS and other validity measures online using their own computers. The online survey was hosted by either Survey Methods or Survey Gizmo.

Results and Discussion

Handling Missing Data

Participants who completed the study but had missing data on items within self-report measures were not automatically excluded, unless specified. For analyses that required mean values, missing item values were replaced with the scale mean when at least 80% of items on a given scale were completed. Participants were excluded from relevant analyses when they completed less than 80% of items on a scale (Downey & King, 1998).

Confirmatory Factor Analysis

Confirmatory factor analysis was conducted to evaluate the stability of the factor structure of the SUITS in light of changes made to address limitations in reliability and validity identified in Study One. Data on a single SUITS item was missing for one participant, so this participant was excluded from the confirmatory factor analysis. Despite the orthogonal rotation method reported for the exploratory factor analysis in Study One, the theoretical

relationship between factors suggested that confirmatory analysis models should include a second order factor (total score) to represent the relationship between factors.[1]

Recommendations provided by Byrne (2010) for running second order confirmatory factor analysis models in AMOS were followed. The Tucker-Lewis Index (TLI), the Comparative Fit Index (CFI), and the Root Mean Square Error of Approximation (RMSEA) were inspected to evaluate the goodness of fit for each of the tested models.

SUITS Self. According to recommendations in the literature (Cole, Ciesla, & Steiger, 2007) correlations between item error terms were permitted a priori due to method effects, i.e., similar item format or wording, for three pairs of items when pairs occurred within the same SUITS factor (items 1 & 2, 3 & 5 and 7 & 10). The results of the total score and three-factor solution are presented in Figure 1. All items on the SUITS Self loaded significantly onto their assigned factor. Factors loaded significantly ($p < .01$) and moderately onto the scale total score suggesting that distinct factors exist, but supporting the use of a total score for the SUITS Self. As hypothesized, the second order three factor solution revealed adequate to good model fit (TLI = .93, CFI = .95, and RMSEA = .05), supporting the strong factor structure of the SUITS Self and the changes made to address previous limitations of the scale.

SUITS General. In the SUITS General, one correlation between each item error term was permitted a priori due to method effects (items 6 & 9). The results of the total score and three-factor solution are presented in Figure 2. All items on the SUITS General loaded significantly onto their assigned factor. Factors loaded significantly ($p < .01$) and moderately onto the scale total score, again indicating that the factors were not independent, but that the use of a total score for the SUITS General was appropriate. As hypothesized, the second order three factor solution revealed adequate to good model fit (TLI = .92, CFI = .94, and RMSEA = .06), demonstrating the strong factor structure of the scale in a community sample.

[1] Single factor (total score) models were formally tested and did not provide adequate fit. Models with second order and factor scores better represented the data and are reported in this study. Testing further models is premature at this preliminary stage of investigation of the facture structure of the SUITS.

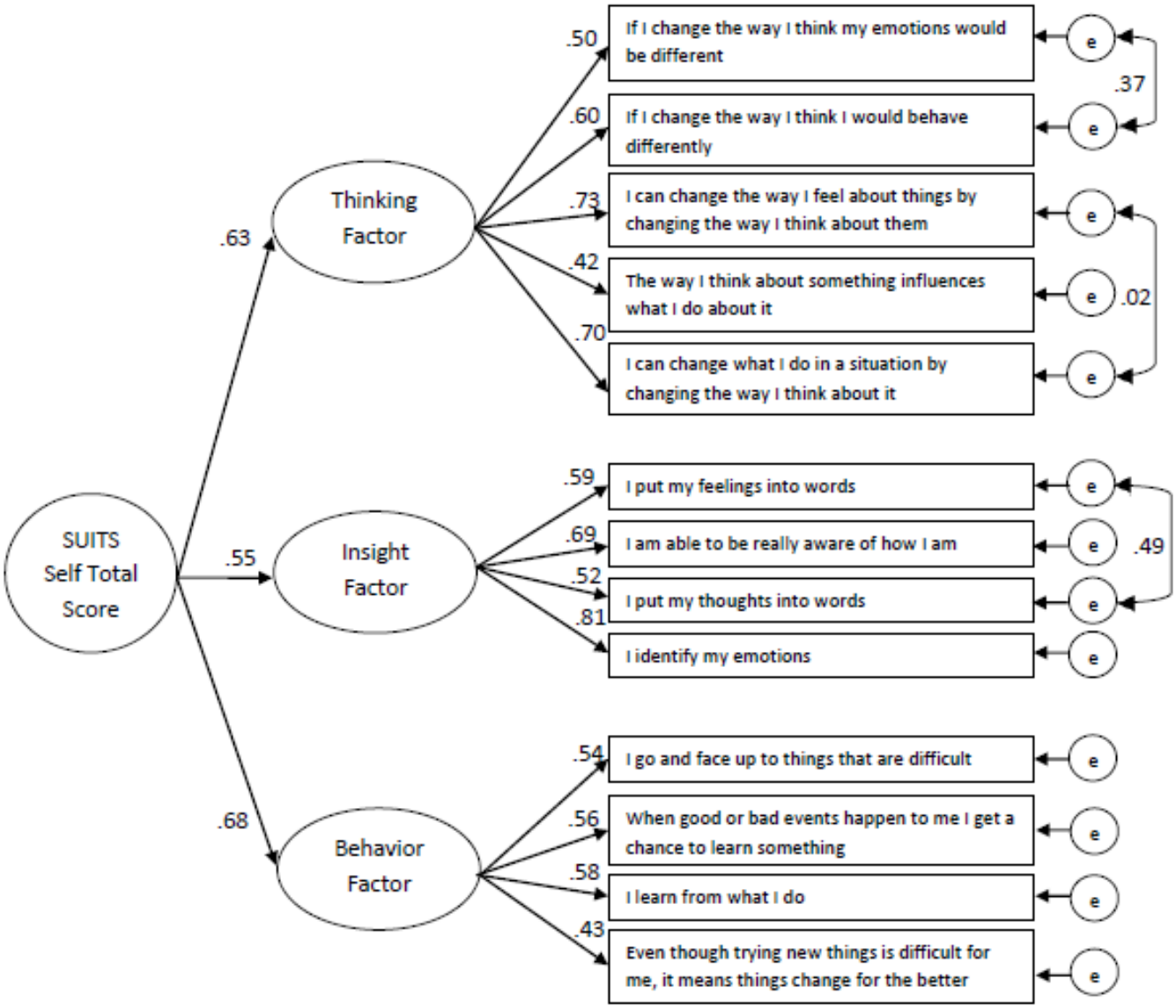

Figure 1. Graphical representation of the three-factor structure of the Skills Used In Therapy Survey - Self from confirmatory factor analysis. Values represent standardized robust maximum likelihood parameter estimates.

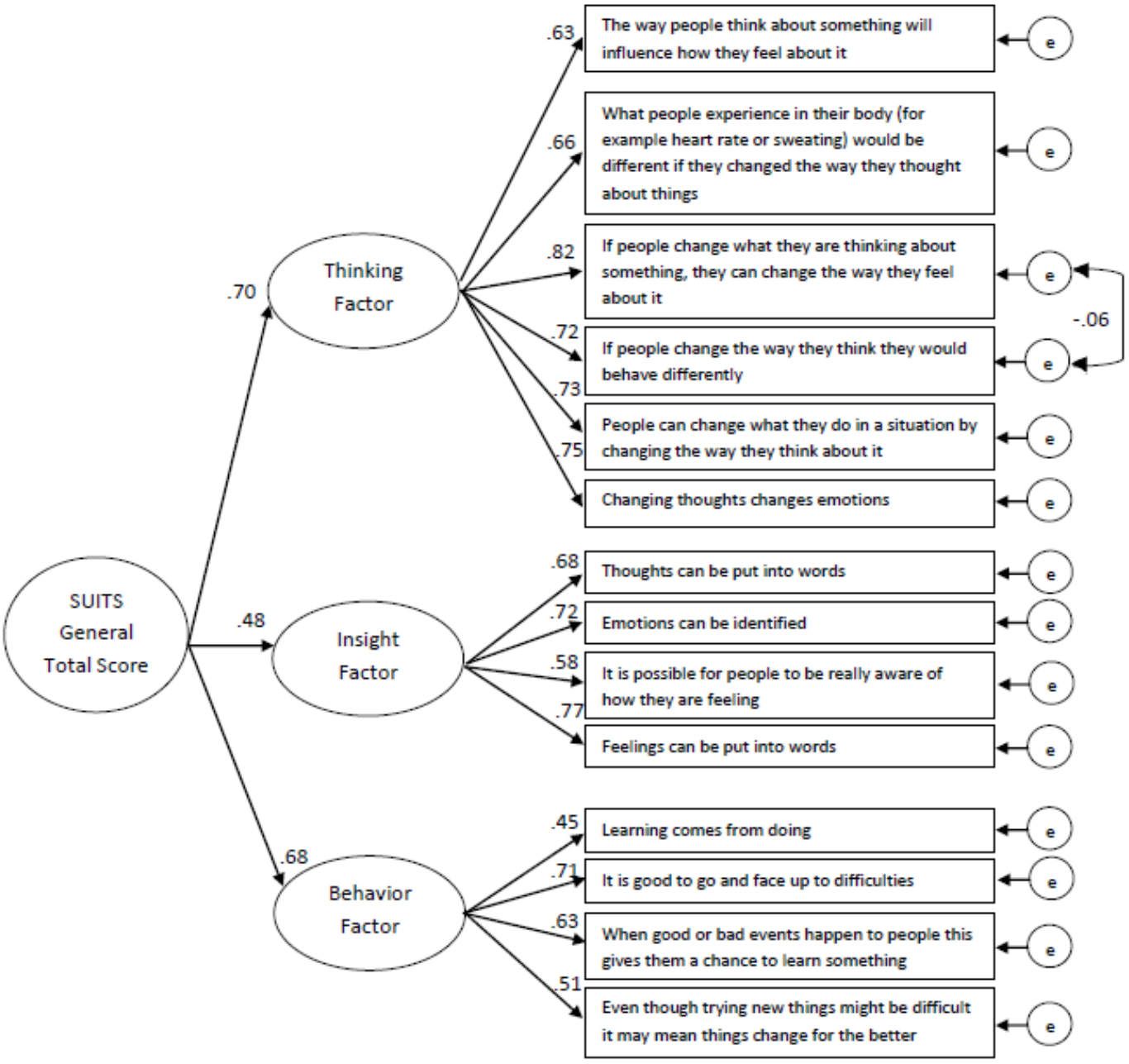

Figure 2. Graphical representation of the three-factor structure of the Skills Used In Therapy Survey – General from confirmatory factor analysis. Values represent standardized robust maximum likelihood parameter estimates.

SUITS and Demographic Variables

Table 5 shows the correlations between SUITS total and factor scores and age and prior CBT knowledge. CBT knowledge was treated as a continuous variable in this study because of the multiple responses returned across all levels of the variable. As expected, no significant correlations were found between age and any of the SUITS total or factor scores. Further, and as expected, small significant positive correlations were found between most SUITS scores and prior knowledge of CBT. Table 6 presents mean SUITS Self and SUITS General total and factor scores, by gender and level of education. A Bonferroni adjusted alpha level of .02 was used for analyses comparing each categorical demographic variable with SUITS Self and SUITS General factor scores, given the three comparisons conducted for factor scores within each scale. Alpha was set at .05 for each scale total score. Overall, as hypothesized, SUITS Self and SUITS General scores were not found to significantly differ by gender or level of education. However, SUITS Self total score was found to be significantly higher for females than males, $F(1, 395) = 6.31$; $p = .01$. In addition, the SUITS Self Insight factor was found to be significantly different for level of education, $F(2, 394) = 3.95$; $p = .02$. Three Tukey HSD follow-up comparisons indicated that SUITS Self Insight scores were higher for those who had received a ‘bachelor or higher degree’ compared to those who had completed high school.

Table 5

Summary of Correlations, Means and Standard Deviations for study variables at (N= 397)

Measure	1	2	3	4	5	6	7	8	9	10	11	12	13	14
SUITS Self														
1. Total	-													
2. Thinking	.72**	-												
3. Insight	.74**	.23**	-											
4. Behavior	.64**	.26**	.24**	-										
SUITS General														
5. Total	.64**	.57**	.37**	.40**	-									
6. Thinking	.57**	.68**	.26**	.23**	.84**	-								
7. Insight	.45**	.21**	.47**	.24**	.66**	.29**	-							
8. Behavior	.33**	.22**	.06	.48**	.66**	.37**	.22**	-						
9. Age	.02	.03	.04	-.05	-.03	-.01	-.00	-.07	-					
10. Prior CBT Knowledge	.23**	.16**	.22**	.09	.15**	.12*	.16**	.03	.13**	-				
11. Depression	-.19**	-.02	-.16**	-.23**	-.13**	-.03	-.13**	-.17**	-.02	-.03	-			
12. Anxiety[a]	-.10	.03	-.11*	-.14**	-.07	.02	-.11*	-.10	-.17**	-.11*	.59**	-		
13. CBT credibility[b]	.28**	.31**	.14**	.13**	.36**	.35**	.21**	.20**	-.03	.12*	-.21**	-.15**	-	
14. Medication credibility	.03	.05	.02	-.02	.07	.07	.04	.04	-.08	-.06	.09	.13*	.22**	-
M	50.81	20.10	15.07	15.64	56.55	23.87	15.93	16.75	34.09	1.93	10.28	8.64	38.19	28.27
SD	5.37	2.68	2.87	2.05	5.22	3.09	2.17	1.80	12.82	1.32	9.05	8.26	8.94	11.04

Note. SUITS = Skills Used In Therapy Survey; CBT = Cognitive Behavior Therapy.

[a] a square root transformation was performed on this variable for the correlations.

[b] $n = 395$

* = $p < .05$, ** = $p < .01$

Table 6
Mean Skills Used In Therapy Survey Scores by Categorical Demographic Variables (SD in parentheses, N = 397)

	Total sample	Gender		Education		
		Males	Females	High school	Certificate or diploma	Bachelor degree or higher
SUITS Self						
Total	50.81 (5.37)	49.91_a (5.05)	51.09_a (5.44)	49.33 (5.41)	50.79 (5.09)	51.31 (5.40)
Thinking	20.10 (2.68)	19.81 (2.31)	20.18 (2.78)	19.64 (2.63)	19.98 (2.65)	20.30 (2.69)
Insight	15.07 (2.87)	14.43 (2.88)	15.27 (2.84)	14.38_a (2.98)	14.94 (2.92)	15.36_a (2.78)
Behavior	15.64 (2.05)	15.68 (2.23)	15.63 (2.00)	15.30 (2.20)	15.87 (1.90)	15.65 (2.05)
SUITS General						
Total	56.55 (5.22)	55.95 (5.27)	56.74 (5.20)	55.72 (4.91)	56.08 (5.67)	57.03 (5.09)
Thinking	23.87 (3.09)	23.54 (3.10)	23.97 (3.09)	23.47 (2.79)	23.76 (3.13)	24.05 (3.17)
Insight	15.93 (2.17)	15.66 (2.23)	16.02 (2.15)	15.70 (2.54)	15.74 (2.11)	16.09 (2.06)
Behavior	16.75 (1.80)	16.74 (1.84)	16.75 (1.79)	16.55 (1.68)	16.59 (1.92)	16.88 (1.79)

Note. Means in each row that share subscripts were found to be significantly different.

Construct Validity

Univariate descriptives were inspected for all variables. Transformations were performed for variables that were not normally distributed and are reported when they adequately corrected for normality and impacted the pattern of results.

Psychological symptoms. Table 5 shows the correlations between both DASS-21 subscale scores and SUITS Self and SUITS General total and factor scores. Overall the correlations are mixed. Contrary to expectations, depression symptoms were significantly and negatively correlated with all SUITS scores except the SUITS Self and SUITS General Thinking factor. As hypothesized, anxiety scores mostly returned nonsignificant correlations with SUITS scores. Importantly, all significant correlations were small in magnitude and in line with the conceptual argument that SUITS scores should not be related to psychopathology, i.e., correlations were negative in direction.

Concurrent Criterion Validity

Hierarchical multiple regressions were conducted to measure concurrent criterion validity. As shown in Table 5, the bivariate relationship between CBT knowledge was significant for CBT treatment script credibility but not pharmacological treatment script credibility. As a result, CBT knowledge was entered as a control variable in all regression analyses where CBT treatment script credibility was the dependent variable. Four separate regressions were initially conducted. CBT treatment script credibility ratings were used as the dependent variable in two regression analyses, one with SUITS Self total score as the predictor and the other with SUITS General total score. The remaining two regressions were run with pharmacological treatment script credibility rating as the dependent variable and either SUITS Self or SUITS General total score as the predictor. When SUITS total score was found to significantly predict the dependent variable, follow up regression analyses were conducting replacing the respective total score with the relevant SUITS factor scores.

In line with hypotheses, SUITS total scores (Self and General) did not significantly predict pharmacological treatment script credibility ($F(1, 395) = .40$; $p = .53$ and $F(1, 395) = 1.87$; $p = .17$ respectively). However, as expected, both regression models where SUITS total scores were used to predict CBT treatment script credibility, controlling for CBT knowledge, were significant (SUITS Self total score: adjusted $R^2 = .078$, $F(2, 392) = 17.65$, $p < .001$; SUITS General total score: adjusted $R^2 = .132$, $F(2, 392) = 30.91$, $p < .001$). Two further regression analyses were conducted using SUITS Self and SUITS General factor scores to predict CBT credibility after controlling for CBT knowledge. Both regression models were significant overall when SUITS factor scores predicted CBT credibility in combination with CBT knowledge (SUITS Self factor scores: adjusted $R^2 = .099$, $F(4, 390) = 11.77$, $p < .001$; SUITS General factor scores: adjusted $R^2 = .134$, $F(4, 390) = 16.30$, $p < .001$). Results for the final model (block 1 and 2 together) for each of the four regression analyses where SUITS Self and SUITS General total and factor scores predicted credibility ratings of CBT are

presented in Table 7. This table shows that when SUITS factor scores were entered together, the SUITS Thinking factor was a unique significant predictor of CBT credibility for both SUITS Self and SUITS General, explaining approximately 7% of the variance in CBT credibility for both scales. The SUITS Insight factor was also a unique predictor of CBT credibility but only for the General scale.

In summary, reported regression results provide initial support for the concurrent criterion validity of the SUITS within a nonclinical sample. Overall, SUITS scores explained a small amount of the variance of psychological treatment credibility. Results suggest that the SUITS General scale explains more variance in CBT credibility than the SUITS Self, and that the SUITS Thinking factor appears to be particularly relevant for predicting CBT credibility in a nonclinical sample.

Incremental Validity

Hierarchical multiple regressions were again conducted to investigate the incremental validity of the SUITS with psychopathology. Given that SUITS scores significantly predicted CBT credibility, but not pharmacological treatment credibility, all regression analyses used CBT credibility rating as the dependent variable. CBT knowledge was again entered as a control variable in Block 1 of each regression analysis due to its significant bivariate relationship with CBT credibility. Both measures of psychopathology (depression and anxiety symptoms) were also included as covariates and were entered together in Block 2 of each regression analysis. Each regression analysis varied only in the final block (Block 3) where SUITS scores were entered. Regression analyses were initially performed for SUITS Self and General total scores, which were entered separately into two regression analyses. When total scores significantly predicted CBT credibility, regression analyses were re-run entering the three SUITS factor scores instead of the respective SUITS total score.

Table 7
Hierarchical Multiple Regression Analyses Predicting CBT Credibility from SUITS Self and General Total and Factor Scores Controlling for CBT Knowledge (n = 395).

	β	t	p	η^2%
Regression 1				
CBT knowledge	.061	1.23	.22	0.35
SUITS Self Total	.267	5.38	**<.01**	6.76
Regression 2				
CBT knowledge	.071	1.49	.14	0.49
SUITS General Total	.352	7.42	**<.01**	12.11
Regression 3				
CBT knowledge	.064	1.29	.20	0.38
SUITS Self				
Thinking	.280	5.53	**<.01**	7.00
Insight	.055	1.08	.28	0.27
Behavior	.036	0.72	.47	0.12
Regression 4				
CBT knowledge	.069	1.46	.15	0.46
SUITS General				
Thinking	.286	5.50	**<.01**	6.66
Insight	.105	2.12	**.04**	0.98
Behavior	.063	1.25	.21	0.34

Note. The reported standardized βs are for the final model (2 blocks together) for each of the four reported regressions. CBT = Cognitive Behavior Therapy; SUITS = Skills Used In Therapy Survey.

Results for the regression analyses predicting CBT credibility from SUITS scores, over and above CBT knowledge and psychopathology, are presented in Table 8. In combination, CBT knowledge, psychopathology (depression and anxiety symptoms), and SUITS scores significantly predicted CBT credibility for all four regression models (SUITS Self total score: adjusted R^2 = .102, $F(4, 390) = 12.17$, $p < .001$; SUITS General total score: adjusted R^2 = .156, $F(4, 390) = 19.19$, $p < .001$; SUITS Self factor scores: adjusted R^2 = .134, $F(6, 388) = 11.17$, $p < .001$; SUITS General factor scores: adjusted R^2 = .164, $F(6, 388) = 13.93$, $p < .001$). Importantly, total R^2 change was significant (*ps* < .01) for the final block of all regression models, suggesting that the addition of SUITS Self and SUITS General total and factor scores significantly increased the explained variance of CBT credibility over and

above CBT knowledge and psychological symptoms. In addition, SUITS Self and SUITS General total and Thinking factor scores were significant unique predictors in their respective regression models. SUITS Self total score and SUITS General total score separately explained 5% and 11%, respectively, of CBT credibility variance after controlling for CBT knowledge, depression, and anxiety symptoms. Furthermore, the SUITS Self Thinking factor score was a significant unique predictor of CBT credibility, explaining approximately 8% of variance in CBT credibility over and above the other SUITS factor scores, CBT knowledge, and depression and anxiety symptoms. A consistent pattern of results was found for the regression model adding SUITS General factor scores, where the SUITS General Thinking factor was a significant predictor of CBT credibility, explaining 7% of the variance in CBT credibility after controlling for the other SUITS General factor scores, CBT knowledge, and depression and anxiety symptoms.

In summary, although SUITS scores again only explained a small amount of variance in CBT credibility, the regression results suggest that SUITS scores, particularly SUITS Thinking factors, provide information over and above psychological symptoms, when explaining CBT relevant constructs, in this case CBT credibility.

Table 8

Hierarchical Multiple Regression Analyses Predicting CBT Credibility from SUITS Scores Controlling for CBT Knowledge and Psychopathology Symptoms (n = 395).

		Block 1		Block 2		Block 3					
Analysis	Predictor	β	t	β	t	β	t	η^2%	Δ F (df)	Δ R^2	p
Regression 1	CBT knowledge	.122	2.44*	.113	2.30*	.058	1.18	0.31	5.97 (1, 393)	.015	**.02**
	Depression			-.170	-2.71**	-.115	-1.86	0.79			
	Anxiety			-.055	-0.87	-.073	-1.19	0.32	9.02 (2, 391)	.043	**<.01**
	SUITS Self total					.240	4.80*	5.24	23.04 (1, 390)	.053	**<.01**
Regression 2	CBT knowledge	.122	2.44*	.113	2.30*	.065	1.38	0.41	5.97 (1, 393)	.015	**.02**
	Depression			-.170	-2.71**	-.121	-2.02*	0.88			
	Anxiety			-.055	-0.87	-.065	-1.10	0.26	9.02 (2, 391)	.043	**<.01**
	SUITS General total					.332	7.04**	10.63	49.51 (1, 390)	.106	**<.01**
Regression 3	CBT knowledge	.122	2.44*	.113	2.30*	.059	1.22	0.32	5.97 (1, 393)	.015	**.02**
	Depression			-.170	-2.71**	-.140	-2.29*	1.14			
	Anxiety			-.055	-0.87	-.086	-1.42	0.45	9.02 (2, 391)	.043	**<.01**
	SUITS Self Thinking					.296	5.95**	7.78			
	SUITS Self Insight					.032	0.64	0.09			
	SUITS Self Behavior					-.006	-0.12	0.00	13.47 (3, 388)	.089	**<.01**
Regression 4	CBT knowledge	.122	2.44*	.113	2.30*	.062	1.32	0.37	5.97 (1, 393)	.015	**.02**
	Depression			-.170	-2.71**	-.130	-2.19*	1.02			
	Anxiety			-.055	-0.87	-.077	-1.30	0.36	9.02 (2, 391)	.043	**<.01**
	SUITS General Thinking					.302	5.87**	7.29			
	SUITS General Insight					.084	1.70	0.61			
	SUITS General Behavior					.032	0.64	0.08	18.67 (3, 388)	.119	**<.01**

Note. SUITS = Skills Used In Therapy Survey.

* = $p < .05$, ** = $p < .01$

General Discussion

Factor Structure and Reliability

This paper aimed to develop a short, psychometrically sound measure of pre-treatment CBT-like attitudes (self and general) in order to determine whether an individual's mindset broadly aligns with the therapeutic framework and skills of CBT. Exploratory factor analysis revealed a factor structure that reflected attitudes about the causal role of cognitions, experimenting with behavior, and the ability for internal reflection and expression. These CBT-like attitudes have been consistently identified in CBT models and treatment manuals (Allen et al., 2008; Antony & Roemer, 2003; Carter et al., 2008; Craske & Barlow, 2008; Dobson & Dozois, 2010; Franklin & Foa, 2008; Reinecke & Freeman, 2003; Resick et al., 2008; Tarrier, 2008; Turk et al., 2008; Young et al., 2008). While the sample size used in Study One might be considered small for exploratory factor analysis, the 31 items in each scale represents a ratio of 8 participants per item. This ratio is considered appropriate by many researchers (Costello & Osborne, 2005). Modifications were suggested to improve internal consistency and construct validity of the SUITS, which means that comparisons between SUITS scores in Study One and Study Two are based on slightly different versions of the survey. Importantly, however, results in Study Two supported the robust factor structure of the amended SUITS in a community sample using confirmatory factor analysis. The adequate to good model fit found when conducting confirmatory factor analysis is particularly promising given the exploratory and repeated nature of the initial factor analytic procedure presented in Study One. The similar factor structure that emerged for both the Self and General SUITS supports the method used to determine the common components and skills of CBT and therefore the items that were subsequently developed for either scale. Importantly, the final structure of the SUITS scales indicate that the survey is a short self-report instrument (13 items for the SUITS Self and 14 items for the SUITS General), which increases the clinical and research utility of the measurement tool. An important area for future research

will be to investigate the strength of the factor structure of the SUITS (Self and General) in its intended sample, individuals receiving treatment.

It should be noted that the orthogonal rotation method used in the original exploratory factor analysis was selected because it was the first and totally exploratory stage of analysis on the factor structure of the SUITS. Subsequent results, supported by the confirmatory factor analysis results, suggested that the SUITS factors should be correlated. As a result, the use of the orthogonal rotation method in the exploratory factor analysis may have created artifacts in the results. Future replication of the factor structure of the SUITS is therefore warranted.

In addition, adequate to good internal consistency was found, especially with the inclusion of a fourth item to the SUITS Self Behavior subscale. Internal consistency results should be interpreted within the context of the small number of items within each SUITS factor and research that suggests the internal consistency of scales delivered online without the option for scanning answers before submission is often lower than when delivered using pen and paper (Whitener & Klein, 1995). Test retest reliability should be examined in future research to provide further evidence for the temporal stability of the developed scale.

Demographic Variables

Results from Study One and Two, together, provide evidence that SUITS scores are generally unrelated to the demographic variables of age, gender, and level of education. The consistency of findings across an undergraduate (Study One) and a community sample (Study Two) add weight to these results. However, SUITS Self total score and Insight factor score were found to relate to gender and level of education respectively in the community sample. The greater variability in education within the community sample may explain the inconsistent finding, however mixed results have also been found when demographic variables have been used to predict CBT outcome, particularly for gender (Foa et al., 1983; Herbert et al., 2005; McEvoy, 2007; Spek et al., 2008). Prior knowledge of CBT was found to impact SUITS Self scores across both samples, particularly the SUITS Self Thinking and

Insight factors. It is not surprising that prior knowledge of CBT might be related to the SUITS, as exposure to CBT would be expected to alter beliefs and/or individuals with beliefs that align with CBT may be expected to seek out treatment consistent with their views. The lack of a relationship between some SUITS factors and prior knowledge of CBT, particularly in Study One, may be due to the restricted samples used that contained exclusively (or partly in the case of Study Two) psychology undergraduate students studying psychological therapies like CBT.

Construct validity

The consistent relationships found between the SUITS Self Physiology factor and psychological symptoms or emotional instability provided evidence against the construct validity of this factor in Study One, so it was therefore removed from the scale in subsequent investigations of the SUITS. Otherwise, the results from Study One and Study Two provide good preliminary evidence for the construct validity of the SUITS compared to constructs considered to reflect psychological symptoms, therapy skills or adaptive healthy functioning. Evidence for the discriminant validity of the SUITS was consistently found for the SUITS General total and factor scores and the SUITS Self Insight factor within a university sample (Study One), supporting the idea that the SUITS measures broad rather than symptom-focused attitudes. Results for the SUITS Self total and Thinking factor score were inconsistent in the university sample (Study One), generally returning expected nonsignificant results but also small but significant positive correlations with anxiety symptoms. SUITS scores within a community sample (Study Two) however, were either nonsignificant or small and negative in direction supporting the construct validity of the SUITS as a broad but adaptive measure of CBT-like attitudes. Consistent small but significant negative correlations were found between SUITS Self Behavior factor scores and psychopathology in both Study One and Study Two, indicating that this factor may have a stronger relationship with adaptive functioning than the other SUITS scores.

Further evidence for the construct validity of the SUITS was shown in Study One where SUITS scores were consistently positively associated with openness to experience, the personality domain most conceptually related to CBT-like attitudes (Costa & McCrae, 1992; Muten, 1991). The expected small to moderate positive and significant correlations between all SUITS total and factor scores and psychological mindedness, and in general, with emotional intelligence and task-focused coping support the construct validity of the SUITS as reflecting therapy skills and general adaptive functioning (Bastian et al., 2005; Beitel et al., 2005; Ciarrochi et al., 2002; Cooper & Petrides, 2010; Endler et al., 1993; Endler & Parker, 1990; 1994; 1999; Petrides & Furnham, 2001; Trudeau & Reich, 1995). The SUITS Thinking factors were not found to significantly correlate with emotional intelligence or task-focused coping. The Thinking component of the SUITS appears to be more cognitively focused so the nonsignificant correlations found with the adaptive but emotionally focused construct of emotional intelligence and behaviorally-oriented construct of task focused coping are not surprising. Construct validity for the SUITS Thinking factors may be most appropriately determined by investigating relationships between scores on the SUITS and cognitive constructs in the literature. Importantly, investigating the construct validity of the SUITS with CBT-relevant constructs will be important in future research.

Criterion and Incremental Validity

The ultimate test for the criterion validity of the SUITS would be to investigate whether initial SUITS scores predict engagement with, retention, and/or response to treatment in a clinical sample. Concurrent criterion validity was examined in Study Two using treatment script credibility ratings in a nonclinical sample. This was an initial step to provide preliminary evidence for the validity of the developed scale with a CBT-relevant construct, that would provide insight into whether investigation within a clinical sample was warranted. Existing research indicates that treatment credibility ratings are an important factor in determining treatment response (Abramowitz et al., 2002; Addis & Jacobson, 2000; Ahmed &

Westra, 2008; Borkovec et al., 2002; Devilly & Borkovec, 2000; Fennell & Teasdale, 1987; Safren et al., 1997; Smeets et al., 2008). Results were promising and in line with expectations, where SUITS total scores and especially SUITS Thinking factor scores significantly predicted credibility ratings for CBT but not pharmacological interventions. Investigating the ability for SUITS scores to distinguish credibility of CBT compared to other psychotherapies would provide further evidence for the relevance of the SUITS for CBT. This would be an interesting area for future research.

Additionally, evidence of the incremental validity of the SUITS was provided in Study Two, where SUITS total, and specifically the SUITS Thinking factors, significantly predicted CBT credibility ratings over and above psychological symptoms. The consistent pattern of results for both versions of the SUITS adds weight to the incremental validity of the SUITS over psychological symptoms. These are promising findings that demonstrate that the SUITS contributes additional information to symptom severity, suggesting that the survey measures broad attitudes rather than attitudes reflecting pathology. This result also bodes well for pre-treatment CBT-like attitudes predicting CBT outcome over and above symptom severity, the current best predictor of treatment outcome.

SUITS General total scores explained more variance in CBT credibility than SUITS Self total scores, whether entered alone or in addition to psychological symptoms. The SUITS General total score may have explained more variance in CBT credibility than the SUITS Self because the "hypothetical" problem rated by the nonclinical sample reflected general CBT-like attitudes more closely than personal CBT attitudes. The same result may not be found in a clinical sample. When looking at particular factors, the SUITS Thinking factor consistently produced strong results compared to the other factors. These results suggest that the SUITS Thinking factor is a particularly relevant component of CBT-like attitudes in relation to CBT-specific constructs like CBT credibility. Overall, it would be premature to make decisions

about selecting just the General scale and/or just the Thinking factors of the SUITS for ongoing use before the SUITS is empirically investigated in clinical samples.

Importantly, SUITS scores, although significant predictors of CBT credibility alone or over and above psychological symptoms, explained only a small portion of the variance in credibility ratings. It is likely that the small amount of explained variance in CBT credibility is an artifact of the nonclinical sample. This explanation is supported by the finding that psychopathology explained even less variance in CBT credibility than SUITS scores, even though psychopathology is a strong predictor of treatment outcome in clinical samples (Butler et al., 2006). Therefore SUITS scores could be expected to explain more variance in treatment outcome than the current, nonclinical, results suggest. Alternatively, the small amount of variance in CBT credibility explained by SUITS scores might suggest that there is a substantial difference between matching people to treatment based on expectations for symptom-change and measuring their broad pre-treatment CBT-like attitudes. Interpreting the results in this light suggests that the SUITS is not merely an alternative measure of treatment credibility.

Overall, the pattern of results supporting the criterion and incremental validity of the SUITS is promising. The criterion and incremental validity results suggest that exploring the validity of the SUITS in treatment seeking samples and those receiving treatment is warranted and a necessary step for future research to thoroughly investigate the validity of the SUITS.

Conclusion

This paper aimed to develop and investigate the psychometric properties of a short self-report tool that measures pre-treatment CBT-like attitudes and therefore reflects the degree to which an individual's mindset is broadly aligned with the therapeutic framework and principles of CBT. Results on the developed measure, the SUITS, reported in this paper, suggest a strong factor structure that reflects core CBT skills, good internal consistency for a short online survey with two scales, and promising evidence of the construct, criterion, and

incremental validity of the tool. Further investigation of the reliability and validity of the SUITS is necessary, and research within clinical samples will add significant weight to evidence of the psychometric strength of the SUITS. The development of a psychometrically sound measure of pre-treatment CBT-like attitudes (i.e., the SUITS) will enable the investigation of whether individual differences in broad pre-treatment attitudes aligned with CBT predict treatment outcome or retention, or alternatively whether pre-treatment CBT-like attitudes provide information about suitability for CBT.

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Chapter 3

The relevance of the Skills Used In Therapy Survey (SUITS) for cognition and CBT

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Mrs. Lauren McLellan was responsible for the design of the study, the analysis and write up of this paper. Dr. Peters provided statistical and research supervision. Ms. Mia Romano assisted with data collection and entry.

The relevance of the Skills Used In Therapy Survey (SUITS) for cognition and CBT.

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Abstract

This study aimed to provide further evidence for the construct validity of the Skills Used In Therapy Survey (SUITS). The SUITS consists of two self-report scales, the SUITS Self and SUITS General that measure broad pre-treatment attitudes that align with cognitive behavioral therapy (CBT). The SUITS Self measures personal attitudes that align with CBT, whereas the SUITS General measures awareness of CBT-like attitudes for example, that others may hold CBT-like attitudes. While all SUITS scores are considered to reflect adaptive functioning, examining the relationship between SUITS scores and adaptive cognitive constructs, especially those relevant to CBT would provide further evidence for the construct validity of the newly developed instrument. One hundred and forty eight participants completed measures of intelligence and adaptive cognitive constructs (need for cognition and cognitive flexibility) in addition to the SUITS. SUITS scores were generally unrelated to intelligence but were positively associated with adaptive cognitive constructs. In particular, the SUITS scores were positively associated with the component of cognitive flexibility that measures generating alternative interpretations for experiences and difficulties. Overall, results support the construct validity of the SUITS, and demonstrate the specificity of one SUITS factor, the SUITS Thinking factor, in relation to cognitive constructs relevant to CBT.

Validity, cognition, CBT, client characteristics, client treatment matching

The relevance of the Skills Used In Therapy Survey (SUITS) for cognition and CBT.

While cognitive behavioral therapy (CBT) is considered an efficacious treatment for many psychological disorders (Butler, Chapman, Forman, & Beck, 2006) treatment is not equally effective for all those who seek it. Researchers continually seek to improve response to CBT by investigating factors that may explain individual differences in engagement and outcome. Demographic variables, features of disorder, or severity of symptoms, and attitudes about symptom change have typically been investigated as possible differences between clients that may explain variable response to CBT. Research indicates that symptom severity is currently the best predictor of outcome (Eskildsen, Hougaard, & Rosenberg, 2010; Keeley, Storch, Merlo, & Geffken, 2008; Solvason, Ernst, & Roth, 2003). The attitude differences that have been examined as predictors of outcome tend to focus on attitudes in relation to symptom change (e.g., motivation or expectancy for symptom change) or symptom change as a result of a prescribed treatment (e.g., treatment credibility). Inconsistent results have been found using these symptom-focused attitude differences to predict treatment outcome (Borkovec & Mathews, 1988; Borkovec, Newman, Pincus, & Lytle, 2002; Chambless, Tran, & Glass, 1997; Constantino, Arnkoff, Glass, Ametrano, & Smith, 2011; Devilly & Borkovec, 2000; Glass, Arnkoff, & Shapiro, 2001; Kampman, Keijsers, Hoogduin, & Hendriks, 2008; Keeley et al., 2008; Keijsers, Hoogduin, & Schaap, 1994; Price, Anderson, Henrich, & Rothbaum, 2008; Safren, Heimberg, & Juster, 1997; Smeets et al., 2008; Smith, Norton, & McLean, 2012; Vogel, Hansen, Stiles, & Gotestan, 2006; Wolk & Devlin, 2001) and may be due to the conceptual overlap between symptom-focused attitudes and symptom severity, which has already been identified as a strong predictor of outcome. Examining broad, rather than symptom-focused, attitude differences as predictors of outcome may produce more consistent results that can be used to maximize treatment for more clients.

The Skills Used In Therapy Survey (SUITS) has recently been developed to measure pre-treatment attitudes that may be necessary to effectively engage in and respond to CBT. As

such, the SUITS represents a self-report tool that can be used to measure pre-treatment CBT-like attitudes (McLellan, Peters, & Rapee, 2012). Importantly, the SUITS was developed to measure broad, rather than symptom-focused, pre-treatment attitudes in an effort to broaden the individual differences in attitudes that have been examined as predictors of treatment outcome, and provide information distinct from symptom severity, the current best predictor of treatment outcome. In order to comprehensively determine the match between pre-treatment attitudes and CBT skills, two scales were developed to reflect separate domains of CBT attitudes; identifying personally held CBT attitudes, and identifying CBT attitudes in general (i.e., in others). The two scales were named the SUITS Self and SUITS General respectively.

Content validity and factor analytic procedures (using exploratory and confirmatory factor analysis in separate university and community samples) produced SUITS Self and SUITS General scales with strong factor structures measuring attitudes that reflect a) the important role of thinking in determining emotional and behavioral experiences and facilitating changes to those responses (Thinking factor), b) the value of awareness and expression of internal experiences (Insight factor), and c) the ability to be flexible and learn from experiences and behavior (Behavior factor) (McLellan et al., 2012).

Promising initial support for the construct validity of the SUITS has been provided in previous research (McLellan et al., 2012). SUITS scores were generally unrelated to psychopathology, although small negative correlations were found at times. Additionally, expected positive relationships were found between SUITS scores and constructs considered to reflect therapy skills (e.g., the personality domain openness to experience and psychological mindedness). While results for most SUITS scores were positively related to measures of general adaptive functioning (emotional intelligence and task-focused coping), unexpected null results were found for the SUITS Thinking factors. Limited evidence was therefore provided for the construct validity of the SUITS Thinking factors in previous

research. Establishing the construct validity of the SUITS Thinking factors is important because previous research suggests that the SUITS Thinking factors may be more strongly related to CBT relevant constructs than other SUITS factor scores. For example, SUITS Thinking factor scores (along with SUITS total scores) were found to uniquely predict CBT credibility ratings (McLellan et al., 2012). The SUITS Self and SUITS General Thinking factors represent what many would consider the most fundamental premise of CBT, the mediational role of thinking in influencing emotional and behavioral responses (Dobson & Dozois, 2010). Although there is still some debate and difficulty empirically investigating the mediational role of thinking in determining change (DeRubeis et al., 1990; Dobson & Dozois, 2010), many researchers and clinicians agree that the mediational hypothesis is one of the fundamental premises by which CBT is considered to effect change. This may explain the stronger association between SUITS Thinking factors and constructs specifically associated with CBT (i.e., credibility ratings of CBT).

One possible explanation for the limited evidence for the construct validity of the SUITS Thinking factor is that the adaptive constructs examined in previous research represented adaptive emotional (i.e., emotional intelligence) and behavioral (i.e., task-focused coping) responses. The SUITS Thinking factors, however, are considered to measure attitudes that reflect cognitive CBT skills. Extending investigations of the construct validity of the SUITS to include adaptive constructs with a cognitive focus will be important in order to extend research about the construct validity of the SUITS as representing adaptive attitudes, and will be especially important for establishing the construct validity of the SUITS Thinking factors.

Although many measures of maladaptive thinking exist (e.g., dysfunctional attitudes scales) it is important that the cognitive constructs investigated to determine the construct validity of the SUITS represent adaptive cognitive skills and attitudes, as these adaptive constructs would be expected to be associated with all SUITS scores. Given research that

suggests the SUITS Thinking factors may be specifically associated with constructs relevant to CBT, however, it is also important to utilize measures that reflect adaptive CBT-relevant cognitive constructs. Therefore, it is necessary to determine the construct validity of the SUITS against constructs that reflect adaptive cognitive functioning and adaptive cognitive constructs that are relevant to CBT.

Two constructs that represent adaptive cognitive processes and attitudes are need for cognition and cognitive flexibility. Need for cognition has been defined as the capacity to engage in and enjoy effortful thinking (Cacioppo & Petty, 1982, p. 116). Research on need for cognition indicates a strong association between need for cognition scores and adaptive cognitive tasks and processes. For example, need for cognition has been positively associated with enjoyment of cognitive tasks, particularly complex tasks (Cacioppo & Petty, 1982), successful problem solving (Nair & Ramnarayan, 2000), generating complex attributions for human behavior (Fletcher, Danilovics, Fernandez, Peterson, & Reeder, 1986), and introspection (Berzonsky & Sullivan, 1992), and has been negatively associated with frustration and mental discomfort during problem solving (Cacioppo & Petty, 1982), uncertainty about cause and effect relationships (Weary & Edwards, 1994), and closed-mindedness (Cacioppo & Petty, 1982). Need for cognition has also been related to verbal reasoning and measures of academic performance (Bors, Vigneau, & Lalande, 2006; Cacioppo, Petty, Feinstein, & Jarvis, 1996) but not measures of abstract reasoning (Cacioppo, Petty, & Morris, 1983). Need for cognition has been negatively correlated with alexithymia (Taylor, Bagby, & Parker, 1992), anxiety (Olson, Camp, & Fuller, 1984) and an external locus of control (Fletcher et al., 1986). Although no research has been conducted on the relationship between need for cognition and constructs specifically related to CBT, the pattern of associations found in research investigating need for cognition indicates that the cognitive construct is considered adaptive, like the SUITS.

Cognitive flexibility has been defined as the ability to switch cognitive strategies in response to changing environmental stimuli (Lezak, 1983). When measured using the Cognitive Flexibility Inventory (CFI; Dennis & Vander Wal, 2010) the cognitive construct has been operationalized to specifically reflect the type of cognitive flexibility targeted by CBT, making this measurement tool especially relevant for determining the construct validity of the SUITS. The CFI consists of two subscales labeled Control; "the tendency to perceive difficult situations as controllable" and Alternatives; "the ability to perceive multiple alternative explanations for life occurrences and human behavior" and "generate multiple alternative solutions to difficult situations" (Dennis & Vander Wal, 2010, p. 243). Initial research using the CFI has demonstrated negative correlations with depressive symptoms and positive correlations with alternative measures of cognitive flexibility and adaptive forms of coping (Dennis & Vander Wal, 2010). While there is limited empirical evidence for the association between cognitive flexibility and CBT, the fact that the Cognitive Flexibility Inventory (Dennis & Vander Wal, 2010) has been developed to specifically relate to CBT, makes the association between CFI and SUITS scores, especially the SUITS Thinking factors, particularly relevant.

Thus, the two identified cognitive constructs have been considered to reflect adaptive cognitive attitudes and processes. In addition, cognitive flexibility, when measured by the Cognitive Flexibility Inventory, represents a cognitive construct specifically designed to measure cognitive flexibility related to CBT. Investigating associations between SUITS scores, particularly SUITS Thinking factor scores, and these adaptive cognitive constructs will provide further evidence for the construct validity of the SUITS.

Additionally, in acknowledging the importance of adaptive cognitive attitudes in matching individuals to CBT it will be important to investigate the relationship between SUITS scores and intelligence (IQ). Although SUITS scores, particularly the Insight factor scores, have been found to differ based on level of education in a community sample

(McLellan et al., 2012) conceptually, pre-treatment CBT-like attitudes should not be related to intelligence. CBT outcome has not consistently been empirically related to demographic variables that might be considered a secondary measurement of intelligence (e.g., income, socio-economic status, level of education) or measures of intelligence (Haaga, DeRubeis, Stewart, & Beck, 1991). Furthermore, research suggests that CBT is efficacious for children (Kazdin, Siegal, & Bass, 1992; Kendall, 1994) and older adults (Mohlman et al., 2003; Stanley, Beck, & Glassco, 1996; Thompson, Gallagher, & Steinmetz-Breckenridge, 1987; Zeiss & Breckenridge, 1997) who have various levels of cognitive ability. As a result, demonstrating that SUITS scores are not related to measures of intelligence will provide further evidence for the construct validity of the instrument.

The aim of this paper, therefore, was to provide further evidence for the construct validity of an instrument that measures pre-treatment CBT-like attitudes, the SUITS. The study met this aim by examining the validity of the SUITS, particularly the Thinking factors, with adaptive cognitive constructs and a measure of intelligence. It was expected that scores on the SUITS would be positively correlated with existing adaptive cognitive constructs in the literature; need for cognition and cognitive flexibility. It was expected that SUITS Thinking factor scores would be particularly associated with the adaptive cognitive construct relevant to CBT, cognitive flexibility. It was also hypothesized that SUITS scores would be unrelated to general intelligence.

Method

Participants

Participants for this study were recruited via two methods. Ninety seven participants completed the study as part of the course requirements of a first year undergraduate psychology subject at Macquarie University, Sydney, Australia, receiving partial course credit in exchange for participating. Participants ranged in age from 18 to 49 years (M = 19.62 years, SD = 4.12) and 61.9% were female. Fifty one participants completed the study in

response to postings displayed on the Facebook networking site and the Macquarie University Psychology survey portal. These participants could elect to go into a monthly prize draw as an incentive for involvement in the study. Participants ranged in age from 18 to 55 years (M = 25.8 years, SD = 8.02) and 66.7% were female. The two subsamples were significantly different in age, with the subsample recruited through Facebook and the online survey portal being significantly older than the subsample of first year undergraduates ($t(146) = 6.23$, $p < .001$).

Measures

Pre-treatment CBT-like attitudes. The Self and General scales of the Skills Used In Therapy Survey (SUITS) were used to measure broad pre-treatment attitudes that reflect CBT skills (McLellan et al., 2012). The two SUITS scales assess different domains of CBT attitudes. The SUITS Self is a 13-item scale measuring personal attitudes (not necessarily in relation to symptoms or disorder) that match CBT skills, whereas the SUITS General is a 14-item scale measuring general awareness of CBT skills and the ability to identify that others hold attitudes that align with CBT skills. Participants respond to both scales using a five-point Likert scale ranging from 1 (*strongly disagree)* to 5 (*strongly agree)* to rate their level of agreement with an item. Total scores and three factor scores are calculated for both the SUITS Self and SUITS General such that higher scores reflect more CBT-like attitudes. SUITS Self and SUITS General factor scores measure CBT skills that reflect the causal role of thinking in determining emotion and behavior (Thinking), awareness and reflection on internal processes (Insight), and flexibility and learning from experiences and behavior (Behavior). Internal consistency in the current sample reflects previously reported levels in university and community samples and was between $\alpha = .47$ (Behavior) and $\alpha = .74$ (Total) for the SUITS Self and between $\alpha = .71$ (Insight) and $\alpha = .85$ (Total) for the SUITS General.

Verbal reasoning. The Australian Council of Educational Research Advanced Test - AL (Australian Council of Educational Research [ACER], 1982) was used to measure verbal

reasoning as a method of determining intelligence. Four example questions and two practice questions are provided before beginning the test. During the test participants respond to 29 verbal items and are allowed 15 minutes to select the correct response or responses from five options (e.g., "*Find the word that means most nearly the same as hit. Throw, Strike, Catch, Break, Play*"). Correct responses are summed such that higher scores reflect a greater ability to see relationships between and solve verbal problems. Internal consistency of the test has been reported as $\alpha = .83$ and $\alpha = .76$ in two tertiary student samples (ACER, 1982). In the current sample internal consistency reflected previously reported levels ($\alpha = .87$). Acceptable construct and criterion validity have also been reported for this measure of verbal reasoning (ACER, 1982).

Need for cognition. The 18-item Need for Cognition Scale (NCS; Cacioppo, Petty, & Kao, 1984) was administered to participants as a measure of the tendency to engage in and enjoy effortful cognitive activity. Participants respond to items along a five-point Likert scale ranging from 1 (*extremely uncharacteristic of me)* to 5 (*extremely characteristic of me)* according to how characteristic each statement is of them. A total need for cognition score is calculated by reverse scoring relevant items then summing responses. Higher scores reflect greater need for cognition. High internal consistency ($\alpha > .83$) and good convergent and discriminant validity have been reported in a range of undergraduate samples (Cacioppo et al., 1996). Internal consistency within the current sample reflected previous results ($\alpha = .86$). Strong test-retest reliability has also been reported ($r = .88$) in undergraduate samples (Sadowski & Gulgoz, 1992).

Cognitive flexibility. The 20-item Cognitive Flexibility Inventory (CFI; Dennis & Vander Wal, 2010) was used to measure the cognitive flexibility necessary to challenge and alter maladaptive thinking. The inventory provides two subscale scores which specifically measure the tendency to view difficult situations as controllable (Control) and the ability to consider and generate alternative explanations for life occurrences, human behavior, and

difficult situations (Alternatives). Participants report their agreement with each item by responding using a seven-point Likert scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). A total cognitive flexibility score in addition to the two subscale scores are calculated by reverse scoring appropriate items then summing the numeric values for relevant items such that higher scores reflect greater cognitive flexibility. Good to excellent internal consistency ($\alpha = .84$ to $\alpha = .91$) and test-retest reliability ($r = .75$ to $r = .81$) has been reported when using this inventory in volunteer samples (Dennis & Vander Wal, 2010). Internal consistency of the total and subscale scores in the current sample was $\alpha = .87$ for total, $\alpha = .87$ for Control, and $\alpha = .88$ for Alternatives, reflecting findings reported in previous research. Initial validity results for this inventory also appear promising (Dennis & Vander Wal, 2010).

Procedure

The study procedures were approved by the Macquarie University Human Research Ethics Committee. Using personal computers participants accessed a weblink to the online survey either from an online university research participation website or via Facebook. The online survey was hosted by Qualtrics. Participants provided informed consent and completed the SUITS and other measures online.

Results

Univariate descriptives were inspected for all variables before correlations were calculated. Transformations were performed for variables that were not normally distributed and are reported when they adequately corrected for normality and impacted the pattern of results. A preliminary analysis was conducted to investigate the role of gender on the constructs measured in the study. Scores on all measures were not found to be different for males and females in this study (*ps* > .05). Age, the variable that distinguished the two subsamples in the current study, was controlled for by conducting partial correlations for construct validity analyses. Table 1 presents the mean and standard deviation of SUITS Self

and General total and factor scores, verbal reasoning, need for cognition, and cognitive flexibility as well as partial correlations between these variables controlling for age.

Construct Validity

As can be seen in Table 1, verbal reasoning was not significantly correlated with any SUITS Self or SUITS General total or factor scores, except for the SUITS General Insight factor where a small positive correlation was found. Furthermore, need for cognition was positively and significantly correlated with all SUITS total and factor scores except for the SUITS Self and SUITS General Thinking factor. Cognitive flexibility was significantly and positively correlated with all SUITS Self and SUITS General total and factor scores. Specifically, the CFI Alternatives subscale was significantly and positively correlated with all SUITS Self and General total and factor scores, while the Control subscale was significantly and positively correlated with only the SUITS Self and General Insight factor score and the SUITS Self total and Behavior factor scores.

For comparison purposes correlations between the cognitive constructs investigated in the study are worth noting. All cognitive constructs were positively and significantly correlated with each other except for the relationship between verbal reasoning and the cognitive flexibility Alternatives subscale, which was not significant.

Table 1

Summary of Partial Correlations Controlling for Age and Means and Standard Deviations for Study Variables (N= 148)

Measure	1	2	3	4	5	6	7	8	9	10	11	12	13
1. SUITS Self Total	-												
2. SUITS Self Thinking	.70**	-											
3. SUITS Self Insight	.75**	.17*	-										
4. SUITS Self Behavior	.78**	.34**	.49**	-									
5. SUITS General Total	.61**	.54**	.35*	.48**	-								
6. SUITS General Thinking	.44**	.57**	.16	.24**	.85**	-							
7. SUITS General Insight	.52**	.26**	.48**	.44**	.73**	.40**	-						
8. SUITS General Behavior[a]	-.54**	-.41**	-.28**	-.56**	-.79**	-.51**	-.44**	-					
9. Verbal reasoning	.07	-.01	.12	.04	.12	.05	.17*	-.06	-				
10. Need for cognition	.32**	.13	.31**	.28**	.18*	.10	.20*	-.18*	.36**	-			
11. Cognitive flexibility	.45**	.22**	.37**	.44**	.32**	.20*	.31**	-.28**	.22**	.52**	-		
12. CFI Alternatives	.42**	.25**	.30**	.40**	.38**	.28**	.30**	-.33**	.15	.36**	.84**	-	
13. CFI Control	.32**	.10	.30**	.32**	.14*	.04	.21*	-.12	.21*	.49**	.80**	.35**	-
M	49.51	19.81	14.34	15.36	55.72	23.45	15.76	16.52	14.11	62.47	103.66	71.42	32.24
SD	5.36	2.62	2.59	2.01	5.96	3.09	2.06	2.27	6.16	10.18	14.38	9.03	8.26

Note. SUITS = Skills Used In Therapy Survey; CFI = Cognitive Flexibility Inventory.

[a] An inverse square root transformation was performed on this variable for the correlations.

* = $p < .05$, ** = $p < .01$

Discussion

This paper aimed to provide further evidence of the psychometric properties of the SUITS by investigating the construct validity of the SUITS, especially the SUITS Thinking factors, with adaptive cognitive constructs including cognitive constructs specifically relevant to CBT (i.e., cognitive flexibility assessed using the Cognitive Flexibility Inventory).

Promising evidence for the discriminant construct validity of the SUITS was found in this study. Importantly, all SUITS scores except SUITS General Insight were not related to intelligence, operationalized in this study as verbal reasoning. In general this finding supports the hypothesis and provides evidence for the discriminant construct validity of the SUITS. The finding that most SUITS scores were unrelated to verbal reasoning reflects research that has found CBT to be efficacious for groups of individuals thought to have reduced cognitive development or functioning (Kazdin et al., 1992; Kendall, 1994; Mohlman et al., 2003; Stanley et al., 1996; Thompson et al., 1987; Zeiss & Breckenridge, 1997) and research where intelligence (Haaga et al., 1991) or associated demographic variables (Eskildsen et al., 2010; Hamilton & Dobson, 2002; Keeley et al., 2008; Solvason et al., 2003; Steketee & Shapiro, 1995) have not been found to predict CBT outcome. The relationship between SUITS General Insight scores and verbal reasoning indicates that only a small amount of variance in the SUITS General Insight score (2.9%) can be explained by verbal reasoning. Furthermore, the association between the SUITS General Insight factor score and verbal reasoning was smaller than the association between verbal reasoning and the adaptive cognitive constructs need for cognition and cognitive flexibility examined in this study. Such a pattern of findings indicates that a small association between adaptive cognitive constructs and verbal reasoning may be appropriate.

As hypothesized, need for cognition was significantly correlated with all SUITS Self and SUITS General total and factor scores except for the SUITS Thinking factors. While correlations between need for cognition and SUITS Thinking factors were not significant,

they were in the hypothesized direction. The finding that all SUITS scores were positively related, although at times not significantly, supports the idea that SUITS scores and need for cognition are considered adaptive. However, a much stronger relationship was hypothesized between SUITS Thinking factors than the other SUITS scores and need for cognition, given the cognitive focus of both need for cognition and the SUITS Thinking factors. One possible explanation for the unexpected findings is that the SUITS Thinking factors may be especially related to attitudes rather than reports of ability while need for cognition has been empirically associated with ability on many cognitive tasks (Cacioppo & Petty, 1982; Nair & Ramnarayan, 2000). Additionally, need for cognition has been operationalized to measure cognitive motivation (Cacioppo et al., 1996) and has been empirically associated with levels of introspection (Berzonsky & Sullivan, 1992). Motivation represents behavior and introspection reflects insight. Therefore, the significant relationship between need for cognition scores and SUITS Behavior and Insight factor scores found in this study supports previous literature.

Generally positive results were found for the construct validity of the SUITS in relation to cognitive flexibility. As hypothesized, all SUITS scores were found to be positively and significantly correlated with total cognitive flexibility scores. The significant association between all SUITS scores and overall cognitive flexibility provides support for the construct validity of the SUITS with adaptive cognitive constructs, especially those relevant to CBT (Dennis & Vander Wal, 2010). Additionally, in line with hypotheses, positive and significant correlations were found between all SUITS scores and the Alternatives subscale of the CFI. Research suggests that the Alternatives subscale of the CFI was specifically designed to measure attitudes about generating cognitive alternatives, as reflected in the title of the construct; cognitive flexibility, and representing attitudes that are reflected in many descriptions of CBT (Allen, McHugh, & Barlow, 2008; Antony & Roemer, 2003; Carter, Forys, & Oswald, 2008; Craske & Barlow, 2008; Dobson & Dozois, 2010; Franklin & Foa,

2008; Reinecke & Freeman, 2003; Resick, Monson, & Rizvi, 2008; Tarrier, 2008; Turk, Heimberg, & Magee, 2008; Young, Rygh, Weinberger, & Beck, 2008). However, the Control subscale of the CFI was only significantly related to the SUITS General Insight factor and the SUITS Self total, Insight and Behavior factor scores. CFI Control was related to fewer SUITS General scores than hypothesized and contrary to the hypothesis CFI Control was not related to SUITS Thinking factor scores. Measuring judgments of the controllability of difficult situations represents personal and internal attitudes. As a result, scores on the CFI Control subscale may be more related to Self rather than General SUITS scores. Although significant, the relationship between SUITS General Insight and CFI Control was small. Results indicating a significant relationship between SUITS General Insight and both verbal reasoning and CFI Control suggest that this SUITS score may be measuring a general adaptive construct.

Furthermore, a detailed review of the items contained in the Control subscale of the CFI revealed that the Control subscale measures general control but not necessarily cognitive control of difficult situations. While the judgment that situations are controllable could be said to reflect an underlying assumption of CBT, items on the CFI Control subscale do not reflect a specific cognitive skill. For example, the CFI Control items do not reflect the idea of cognitive mediation, that is, items do not reflect the CBT hypothesis that situations can be "controlled" or influenced by the cognitive interpretations that are made. Therefore, although the CFI Control subscale may be considered adaptive, the items do not appear to reflect an adaptive cognitive construct per se. This explanation of findings is supported by previous research where the pattern of results found in this study between SUITS Self scores and CFI Control has also been found between SUITS scores and non-cognitive but adaptive constructs (McLellan et al., 2012).

The fact that hypothesized relationships were only found for the Alternatives subscale of the CFI is particularly relevant since this subscale was the only adaptive cognitive

construct measured in the study that was not significantly correlated with verbal reasoning. Expected correlations between SUITS scores and the CFI Alternatives subscale may reflect that the CFI Alternatives subscale represented the desired cognitive construct i.e., an adaptive cognitive construct that has been developed to represent CBT skills but was not related to verbal intelligence or cognitive ability. The specificity of findings in this study are promising for the construct validity of the SUITS, particularly the SUITS Thinking factors.

However, contrary to the hypothesis, correlations between SUITS Thinking factors and the constructs assessed in this study, even the Alternatives subscale of the CFI, were smaller in magnitude (but generally not significantly smaller[1]) than relationships between the measured constructs and other SUITS factor scores. Nevertheless, results from this study suggest that SUITS Thinking factor scores were specifically associated with the CFI Alternatives subscale, which is considered to measure attitudes that reflect the type of flexibility in thinking that is required in CBT; specifically, generating cognitive alternatives for experiences and difficulties.

Overall, the results found in this study suggest that SUITS scores were generally unrelated to verbal reasoning and related to adaptive cognitive constructs. Results indicated that the SUITS Thinking factors were related specifically to cognitive constructs engendered in CBT, especially generating alternative explanations for experiences (cognitive flexibility), rather than general adaptive cognitive constructs. Importantly, scores on the SUITS Thinking factors also appeared to specifically reflect cognitive attitudes rather than cognitive ability or motivations. The suggestion that the SUITS Thinking factor has particular specificity to CBT supports previous research that found only the SUITS Thinking factors predicted CBT

[1] When comparing the correlations between CFI total and SUITS scores, the correlation between the SUITS Self Thinking factor and CFI total score was significantly smaller than the correlation between the SUITS Self total score and CFI total score ($p = .03$) and the correlation between the SUITS Self Thinking factor and CFI total score was significantly smaller than the correlation between the SUITS Self Behaviour factor score and CFI total ($p = .03$). The size of all other correlations was not significantly different ($p > .05$) when comparing correlations between the cognitive constructs and SUITS Thinking factor scores to correlations with other SUITS scores.

credibility ratings (McLellan et al., 2012). Therefore, further evidence has been found in this study to suggest that the SUITS Thinking factors may be particularly relevant for efforts to determine suitability for CBT or predict treatment outcome.

Limitations

The current study utilized a predominantly undergraduate sample. Given the cognitive focus of the current research the use of this restricted sample may have impacted results. It is possible that limited variability of cognitive scores, given the university sample, may explain the unexpected correlations in this study. Greater variability in scores on both the cognitive constructs and verbal reasoning may be expected in a community sample, therefore limiting the generalizability of the findings in this study beyond university samples. Overall, replicating the current findings in a community sample would strengthen the conclusions of the study.

The CFI, the measure of the cognitive construct providing the strongest evidence for the validity of the SUITS Thinking factors, is itself a newly developed scale. Further information about the psychometric strength of the CFI would add weight to the results found in the current study and may provide empirical evidence to support the suggestion that the Alternatives subscale more so than the Control subscale relates specifically to CBT.

Importantly, the SUITS returned lower than ideal internal consistency in this study, particularly for the SUIT Self Behavior factor. Low internal consistency may be a result of the small number of items within each factor but is a limitation worth noting. The internal consistency of the SUITS requires further investigation in future research.

Directions for Future Research

The SUITS was developed to represent attitudes reflecting CBT skills rather than objectively measuring the degree of implementing CBT skills prior to treatment. As a result, using attitude and self-report measures of cognitive constructs was a strength of the current study. However, it would be interesting to investigate whether CBT-like attitudes reflect

objective measures of cognitive flexibility, for example, using neuropsychological tests. More importantly, future research should further investigate the relationship between SUITS scores and intelligence by measuring cognitive ability rather than verbal reasoning.

Given the preliminary nature of research using the SUITS it was important to initially investigate the relationship between SUITS scores and adaptive cognitive constructs. However, it will be important for future research to investigate the relationship between SUITS scores and dysfunctional cognition and behaviors in order to further demonstrate that the SUITS does not measure pathology-focused attitudes but represents a broad philosophical match with CBT.

Results in this study suggest that the SUITS, particularly the SUITS Thinking factors represent attitudes specific to CBT. Future research investigating the psychometric properties of the SUITS should focus on demonstrating the criterion validity of the scales for predicting CBT suitability, engagement, or outcome, as these constructs represent the best method of determining the relevance of the SUITS for CBT and predicting treatment outcome.

Conclusion and Implications

Overall, the study provides initial support for the construct validity of the SUITS in relation to intelligence and adaptive cognitive constructs, especially cognitive constructs relevant to CBT. The findings in this study support previous research investigating the psychometric strength of the newly developed survey. Importantly, the pattern of findings clearly demonstrates the relevance of the SUITS, specifically the SUITS Thinking factors, for CBT. A psychometrically sound instrument measuring client pre-treatment attitudes that reflect CBT skills will enable future research to examine whether pre-treatment CBT-like attitudes predict CBT engagement or response.

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Chapter 4

Self-reported CBT-like attitudes predict clinician-rated therapy match: Reliability and validity of the Skills Used In Therapy Survey (SUITS)

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Mrs. Lauren McLellan was solely responsible for the design of the research, collection and entry of data, and the analysis and write-up of this paper. Dr. Peters provided statistical and research supervision.

Self-reported CBT-like attitudes predict clinician-rated therapy match: Reliability and validity of the Skills Used In Therapy Survey (SUITS)

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Abstract

This study aimed to provide further evidence for the reliability and validity of the Skills Used In Therapy Survey (SUITS) a self-report instrument measuring pre-treatment attitudes that reflect the principles and skills of cognitive behavioral therapy (CBT). The current study provides evidence for the temporal stability of SUITS scores over a three to four week interval in a sample of 75 university students, demonstrating the test-retest reliability of the SUITS. Nonsignificant correlations between all SUITS scores and social desirability provide consistent evidence for the discriminant construct validity of the SUITS. Finally, SUITS scores, especially the SUITS Thinking factor, were found to significantly predict clinician-rated match with CBT, demonstrating initial evidence for the criterion validity of the SUITS. Results add weight to existing research that supports the good psychometric properties of the SUITS and indicates that research using the SUITS within clinical samples is worthwhile.

Validity, reliability, CBT, client characteristics, client treatment matching

Self-reported CBT-like attitudes predict clinician-rated therapy match: Reliability and validity of the Skills Used In Therapy Survey (SUITS)

The Skills Used In Therapy Survey is a self-report measure of pre-treatment CBT-like attitudes. The SUITS contains two short scales. The Self scale measures personal attitudes that are aligned with CBT skills (13 items), whereas the General scale measures general awareness of CBT skills and the understanding that other people may hold attitudes that align with CBT (14 items). Research has provided evidence for the strong factor structure of the SUITS, indicating that total and three factor scores appropriately summarize both the SUITS Self and SUITS General (McLellan, Peters, & Rapee, 2012). SUITS Self and SUITS General factors assess CBT-like attitudes that represent the fundamental role of thinking in determining emotional and behavioral responses (Thinking), awareness of and the ability to express internal experiences (Insight), and flexibility and learning from behavior and experiences (Behavior).

Previous psychometric investigations have demonstrated that the SUITS has reasonable internal consistency considering the small number of items within each factor and the online delivery method used in previous research. Research has also provided evidence for promising construct, criterion, and incremental validity of both SUITS scales (McLellan, Peters, & Rapee, 2012; McLellan, Peters, & Romano, 2012). Specifically, research investigating the construct validity of the SUITS has found that SUITS scores were related to adaptive constructs considered to reflect CBT-like attitudes (e.g., the personality domain Openness to Experience and psychological mindedness) and general adaptive constructs (e.g., trait emotional intelligence and task-focused coping; McLellan, Peters, & Rapee, 2012). The SUITS was also found to be unrelated to verbal reasoning but associated with adaptive cognitive constructs (McLellan, Peters, & Romano, 2012). In particular, previous research has suggested that the SUITS Thinking factors were specifically associated with adaptive cognitive constructs relevant to CBT, i.e., generating alternative thoughts measured by the

Alternatives subscale of the Cognitive Flexibility Inventory (Dennis & Vander Wal, 2010; McLellan, Peters, & Romano, 2012). While research found mixed results regarding the relationship between SUITS scores and levels of psychological symptoms, findings indicated that SUITS scores were either unrelated to psychopathology or correlations were small and negative in direction (McLellan, Peters, & Rapee, 2012). These results, therefore, are in line with the conceptual argument that SUITS scores should not be positively related to psychopathology. SUITS total and Thinking factor scores have also been found to predict CBT script credibility ratings but not pharmacological treatment credibility, providing promising initial evidence for the criterion validity of the SUITS in a nonclinical sample. Importantly, SUITS scores predicted CBT credibility over and above measures of psychopathology, providing evidence for the incremental validity of the SUITS (McLellan, Peters, & Rapee, 2012).

Overall, research investigating the psychometric properties of the SUITS has provided strong evidence for the use of the instrument when measuring CBT-like attitudes prior to treatment. However, further research investigating the reliability, construct validity, and criterion validity of the SUITS is necessary.

Test-Retest Reliability

Given that the SUITS measures broad attitudes reflecting an individual's mindset or life beliefs, scores are expected to remain stable over a short interval. It is therefore important to investigate the temporal stability of the SUITS in order to provide further evidence for the psychometric strength of the instrument.

Construct Validity

Social desirability is another important consideration in determining the psychometric strength of the SUITS. Researchers have defined social desirability as the phenomenon where individuals may be inclined to present themselves in a desirable light (Nederhof, 1985). Although some researchers disagree (McCrae & Costa, 1983), social desirability has long

been considered a potentially confounding variable in psychological research (Crowne & Marlowe, 1960). Demonstrating the limited influence of social desirability on a measurement tool provides important evidence for the construct validity of the instrument (King & Bruner, 2000). Examining the association between SUITS scores and a typical measure of social desirability will enable the discriminant validity of the SUITS to be further investigated.

Criterion Validity

Research has suggested that CBT clinicians believe that the match between pre-treatment attitudes and therapy is important in determining outcome (Frei & Peters, in press). However, the lack of available tools to determine suitability for therapy has been identified as a limitation of research (Federici, Rowa, & Antony, 2010). One available method for determining suitability for therapy has been provided by Safran and colleagues (Safran, Segal, Shaw, & Vallis, 1990; Safran, Segal, Vallis, Shaw, & Samstag, 1993). Safran and colleagues (1990; 1993) have provided a manual to guide clinicians to determine suitability for therapy based on initial interactions with clients. Safran's tool directed clinicians to consider a broad range of potential predictors of treatment outcome when determining suitability for therapy (e.g., optimism regarding therapy, accepting responsibility for change, compatibility between the therapy rationale and symptom change, chronicity of problems, potential for therapeutic alliance etc.). The range of factors identified by Safran and colleagues means that the suitability for therapy manual does not represent a method of assessing solely broad pre-treatment CBT-like attitudes. However, Safran and colleagues' research suggests that the match between general pre-treatment attitudes and CBT skills can be ascertained by clinicians during interactions with clients. The concurrent criterion validity of the SUITS could therefore be examined by using SUITS scores to predict clinician ratings of participants' expressed CBT-aligned attitudes early in therapy. In the current study using a nonclinical sample, clinicians rated participants' CBT-like attitudes during video-taped discussions. During discussions participants shared their reflections about a difficulty they encountered

and how the difficulty was resolved. Participants were required to reflect on non-distressing difficulties to increase the likelihood that broad rather than symptom-focused attitudes would be expressed.

Study Aims and Hypotheses

The aim of this study was to contribute towards the body of research investigating the psychometric properties of the SUITS, an instrument developed to measure pre-treatment CBT-like attitudes. It was hypothesized that the temporal stability of the SUITS would be demonstrated by good test-retest reliability correlations for SUITS total and factor scores over a short interval. It was also hypothesized that nonsignificant correlations between SUITS total and factor scores and a measure of social desirability would be found, providing evidence for the discriminant construct validity of the SUITS. Additionally, it was hypothesized that SUITS total scores would significantly predict clinician ratings of participants' expressed CBT-like attitudes. For SUITS factor scores it was hypothesized that the SUITS Thinking factors, determined in previous research to be particularly relevant to CBT, would be the strongest predictors of therapist-rated CBT match. These results would provide initial evidence for the concurrent criterion validity of the SUITS.

Method

Participants

Eighty two undergraduate psychology students from Macquarie University, Sydney, Australia participated in the study receiving either partial course credit or payment in exchange for participating. Participants ranged in age from 18 to 62 years with a mean of 22.35 years (*SD* = 8.02) and 86.6% were female. In order to determine test-retest reliability participants attended a second testing session. Seventy five participants provided data at both time-points, which corresponds to a 91% retention rate. Participants who completed the retesting session ranged in age from 18 to 62 years with a mean of 22.6 years (*SD* = 8.34) and 88% were female. Sixty two of the seventy five participants also contributed data for the

criterion-validity investigation, receiving either additional partial course credit or payment in exchange for participating. The criterion-validity subsample of participants ranged in age from 18 to 48 years with a mean of 22.55 years (*SD* = 7.76) and 82.3% were female.

Measures

Pre-treatment CBT-like attitudes. The Skills Used In Therapy Survey (SUITS) was used to measure pre-treatment attitudes that align with CBT principles or skills. The two SUITS scales (Self and General) contained 13 and 14 items respectively and were rated by participants according to their level of agreement using a five-point Likert scale ranging from 1 (*strongly disagree)* to 5 (*strongly agree*). The SUITS Self assessed the match between CBT skills and personal attitudes, whereas the SUITS General measured general awareness of CBT skills (e.g., in others). Total and factor scores were calculated for both the SUITS Self and SUITS General according to previous factor analytic procedures (McLellan, Peters, & Rapee, 2012). Factor scores represented Thinking, Insight, and Behavior related CBT skills. Internal consistency in the current sample reflects previously reported levels within university samples for the SUITS General and was between $\alpha = .59$ and $\alpha = .80$. Internal consistency was slightly lower for the SUITS Self in this sample compared to previous research and was between $\alpha = .51$ and $\alpha = .68$.

Social desirability. The 33-item Marlowe-Crowne Social Desirability Scale (MCSDS; Crowne & Marlowe, 1960) was used to measure socially desirable responding. The self-report items were rated as true or false as they pertained to participants. Socially desirable responses were summed such that higher scores reflected greater socially desirable responding. Internal consistency of the scale has been reported as adequate, ranging from $\alpha = .70$ to $\alpha = .88$ in student samples. High test-retest reliability has also been reported (ranging from $r = .86$ to $r = .89$; Crino, Svoboda, Rubenfeld, & White, 1983; Crowne & Marlowe, 1960; Nordholm, 1974; Tanaka-Matsumi & Kameoka, 1986). The scale has consistently

failed to show correlations with pathology, reinforcing the validity of the measure. Internal consistency in the current sample reflects previous results (α = .76).

Clinician-rated CBT attitudes. In a videotaped discussion with the researcher, participants were instructed to reflect on a superficial and currently resolved problem or difficulty they had faced in the past (e.g., conflict in an intimate relationship, conflict with a friend or work colleague). Participants were asked open ended, broad questions designed to facilitate discussion about both the problem and its resolution but enable participants to respond based on their level of reflection and/or insight regarding the topic (e.g., "*describe the problem*," "*tell me more about the problem*," or "*how did the solution come about*"). An experienced CBT-trained psychologist viewed the recordings of all discussions and, responded to 13 items (See Appendix B) measuring the extent to which each participant's discussion reflected broad CBT-like attitudes (e.g., "how well did the person demonstrate a link between their thoughts and their emotional experience relating to the problem?"). Items were rated using a five-point Likert scale ranging from 0 (*not at all*) to 4 (*extensively*). A total score for these 13 items was calculated by summing responses to all items such that higher scores reflected greater evidence of a mindset or attitudes aligned with CBT during the participant's discussion. A second CBT-trained psychologist rated a random sample of 25% of the recorded interviews (15 videos) in order to determine the reliability of this procedure. Total scores for the two psychologists were moderately correlated and significant ($r(13) = .56$, $p = .03$), providing evidence of the reliability of this procedure.

State anxiety. The 10-item state anxiety measure developed by Rapee and Abbott (2007) for use following recorded speech tasks was used to measure the degree of anxiety participants experienced while being video recorded during discussions rated by clinicians. Participants rated the items based on how they felt during the 'video recorded interview' rather than 'video recorded speech' used in the initial version of the scale. Responses were recorded on a five-point numeric scale from 0 to 4, where higher scores reflected greater state

anxiety levels during the recorded discussion. Previous research has indicated high internal consistency for the measure (α = .96; Rapee & Abbott, 2007), and this value was reflected in the current sample (α = .91).

Prior CBT knowledge. Along with gathering information about the age and gender of each participant, this study collected data regarding participants' prior knowledge of CBT (rated along a five-point scale; *none, minimal, some, substantial,* and *extensive*). Knowledge of CBT was treated as a continuous variable in the study and was investigated as a potential confounding variable.

Procedure

The study procedures were approved by the Macquarie University Human Research Ethics Committee. Under the supervision of the first author (LM) participants provided informed consent and completed the SUITS and MCSDS via an online survey using university computers. Participants then returned approximately three to four weeks later to complete the online survey a second time. Participants were recruited for an additional research session, where, under the supervision of the first author they provided informed consent and completed the SUITS online using university computers. Participants carrying out the additional research then completed the recorded discussion with LM and rated their state anxiety during the discussion.

Results

A malfunction in the video recording equipment used in the study meant that interviews for three participants could not be used, reducing the sample to $n = 59$. Univariate descriptives were inspected for all variables before correlations were calculated. Transformations were performed for variables that were not normally distributed and are reported when they adequately corrected for normality and impacted the pattern of results. Table 1 presents the mean and standard deviation of SUITS total and factor scores at both time-points, the Marlowe-Crowne social desirability scale, clinician-rated CBT-like attitudes,

and state anxiety during the video recorded discussion. Discussions ranged in length from 4.23 to 27.13 minutes (M = 11.42, SD = 5.16).

Table 2 summarizes Pearson's correlations between SUITS total and factor scores collected between three and four weeks apart and Pearson's correlations between SUITS total and factor scores and social desirability. All correlations between SUITS scores at the two time points are moderate to large, positive, and significant ($p < .001$). All correlations between initial SUITS total and factor scores and social desirability were found to be nonsignificant ($p = .05$)[1].

Given the small sample size of the criterion validity subsample ($n = 59$), the relationship between clinician-rated CBT attitudes, SUITS scores, and potentially confounding variables were investigated in order to determine which covariates were necessary for analyses examining the concurrent criterion validity of the SUITS. Age was significantly correlated with clinician-rated CBT attitudes ($r(59) = .31$, $p = .02$) but was not significantly correlated with any SUITS total or factor scores ($p > .05$). Males and females were not significantly different on clinician-rated CBT attitudes or SUITS total and factor scores ($p > .05$). Prior CBT knowledge and state social anxiety during the video recorded discussion were not significantly correlated with clinician-rated CBT attitudes nor with SUITS total or factor scores ($p > .05$). As a result, age was the only variable controlled for in regression models.

[1] Prior CBT knowledge was significantly correlated with initial SUITS Self and General Thinking factor scores ($r(80) = .29$, $p < .01$ and $r(80) = .31$, $p < .01$ respectively) but was not correlated with any other initial SUITS total or factor scores or social desirability. Partial correlations controlling for prior CBT knowledge did not change the pattern of results so simple Pearson's correlations were reported.

Table 1

Mean and Standard Deviation for Study Variables

Source	Test-Retest Sample				Criterion Validity Subsample	
	Test: $N = 82$		Retest: $n = 75$		$n = 62$	
	Mean	SD	Mean	SD	Mean	SD
SUITS Self						
Total	51.34	4.46	51.12	4.77	50.82	5.20
Thinking	20.20	2.00	20.28	2.01	20.42	2.24
Insight	14.90	2.58	14.79	2.76	14.39	3.21
Behavior	16.24	1.77	16.05	1.77	16.02	1.74
SUITS General						
Total	57.91	4.54	57.24	4.38	57.71	4.97
Thinking	24.44	2.40	24.19	2.23	24.31	2.59
Insight	16.24	2.02	16.01	1.80	16.23	2.03
Behavior	17.23	1.51	17.04	1.64	17.18	1.67
Social Desirability	15.59	5.02				
Clinician-rated CBT match[a]					29.34	9.90
State anxiety					6.58	6.55

Note. Samples reported in this table represent subsamples of the original ($N = 82$).

SUITS = Skills Used In Therapy Survey.

[a] Based on subsample of $n = 59$.

Table 2

SUITS Test-Retest Reliability and Discriminant Validity with Social Desirability (N =82)

Time 1	SUITS Time 2[a]	Social Desirability
SUITS Self		
Total	.82*	.17
Thinking	.70*	-.03
Insight	.76*	.18
Behavior	.67*	.20
SUITS General		
Total	.72*	-.07
Thinking	.68*	-.06
Insight	.64*	-.04
Behavior	.50*	-.05

Note. SUITS = Skills Used In Therapy Survey.

[a] Based on retesting subsample of $n = 75$.

* = $p < .01$

Four hierarchical multiple regressions were conducted to investigate whether SUITS scores predicted clinician-rated CBT attitudes. Age was entered in Block 1 of each regression. Block 2 differed for each of the four regression models based on the method of scoring the SUITS: SUITS Self total score, the three SUITS Self factor scores, SUITS General total score, and the three SUITS General factor scores were entered separately into Block 2 of the respective regressions. Regressions were run separately for each method of scoring the SUITS to initially investigate the validity of SUITS total scores and then SUITS factor scores. In the final model age and the respective SUITS scores significantly predicted clinician-rated CBT attitudes for all four regression analyses (SUITS Self total score: adjusted $R^2 = .155$, $F(2, 56) = 6.32$, $p < .01$; SUITS Self factor scores: adjusted $R^2 = .196$, $F(4, 54) = 4.54$, $p < .01$; SUITS General total score: adjusted $R^2 = .093$, $F(2, 56) = 3.67$, $p = .03$; SUITS General factor scores: adjusted $R^2 = .135$, $F(4, 54) = 3.27$, $p = .02$). Table 3 summarizes the statistics for the final

model of each regression analysis. For regression one, SUITS Self total score significantly predicted clinician-rated CBT attitudes over and above age. For regression two, the SUITS Self Thinking factor was the only significant individual predictor of clinician-rated CBT attitudes. While in regression three, age, but not SUITS General total score, was a significant predictor of clinician-rated match with CBT, in regression four both age and the SUITS General Thinking factor score were significant unique predictors of clinician-rated CBT attitudes.

Table 3

Hierarchical Multiple Regression Analyses Predicting Clinician-Rated CBT Attitudes from SUITS Self and SUITS General Total and Factor Scores Controlling for Age (n = 59).

	β	t	p	η^2%
Regression 1				
Age	.240	1.95	.06	5.52
SUITS Self Total	.309	2.50	**.02**	9.12
Regression 2				
Age	.252	2.06	.05	5.86
SUITS Self				
Thinking	.400	2.97	**<.01**	12.25
Insight	.067	0.53	.60	0.40
Behavior	-.020	-0.15	.89	0.03
Regression 3				
Age	.297	2.36	**.02**	8.82
SUITS General Total	.152	1.20	.23	2.28
Regression 4				
Age	.275	2.24	**.03**	7.45
SUITS General				
Thinking	.362	2.41	**.02**	8.70
Insight	.058	0.44	.66	0.28
Behavior	-.026	-1.75	.09	4.54

Note. The reported standardized βs are for the final model (2 blocks together) for each of the four reported regressions. SUITS = Skills Used In Therapy Survey.

Discussion

Test-Retest Reliability

As hypothesized the test-retest reliability results indicate that SUITS scores have satisfactory temporal stability. SUITS General scores were found to have slightly lower test-retest reliability than SUITS Self scores. Instructions for the SUITS General require participants to reference 'people in general' when rating items. It is possible that SUITS General responses may fluctuate based on a person's recent interactions with others, resulting in reduced temporal stability for this scale more so than the SUITS Self. Although not ideal, test-retest reliability results for the SUITS Self and SUITS General are in line with other commonly used self-report scales of personality (Caruso, 2000; Gosling, Rentfrow, & Swann, 2003; Rammstedt & John, 2007) or clinically relevant constructs, particularly those that are brief (Yin & Fan, 2000) and/or have been examined over a fairly short interval (Bhar, Beck, & Butler, 2012).

Construct Validity

Nonsignificant relationships between SUITS total or factor scores and social desirability were consistently found, supporting hypotheses. These results provide clear evidence for the discriminant construct validity of the SUITS and support previous research on self-report tools that measure constructs relevant to pre-treatment CBT-like attitudes i.e., reflecting on internal processes (McCallum & Piper, 1990), health related attitudes (Knauper, Rabiau, Cohen, & Patriciu, 2004), self awareness and skill levels (Strike, Skovholt, & Hummel, 2004), and therapy outcomes (Lewandowski, 2004). Overall, as expected, nonsignificant correlations were found for all SUITS total and factor scores demonstrating the discriminant construct validity of the SUITS.

Concurrent Criterion Validity

Strong evidence for the concurrent criterion validity of the SUITS was provided in this study. As hypothesized SUITS Self total score and the SUITS Self Thinking factor score were

significant predictors, over and above age, of clinician ratings of the match between participants' expressed attitudes during the recoded interview and CBT. While SUITS General total score was not a significant predictor of clinician-rated CBT attitudes over and above age, the SUITS General Thinking factor was. For the latter regression model, even though age was still a significant predictor of clinician-rated CBT attitudes the SUITS General Thinking factor explained more unique variance (8.70%) than any other predictor in the model. Overall, these findings support the development of the SUITS as an instrument that reflects CBT-like attitudes as assessed by experienced clinicians. The consistency of findings, especially for the SUITS Thinking factors, supports the argument that strong evidence has been provided for the criterion validity of the SUITS within a nonclinical sample. The significance of SUITS Thinking factor scores in predicting clinician-rated CBT attitudes supports previous research that indicated SUITS Thinking factor scores were associated with constructs specifically relevant to CBT (McLellan, Peters, & Rapee, 2012; McLellan, Peters, & Romano, 2012). Given research that clinicians report the importance of therapy-aligned beliefs in influencing treatment outcome (Frei & Peters, in press) and that suitability for therapy can be determined by clinicians (Safran et al., 1990; 1993), this result is an important contribution to the body of literature investigating the psychometric properties of the SUITS.

However, it is important to acknowledge that there is lower than ideal reliability between the two coders which suggest the procedure for measuring clinician-rated CBT-attitudes may be limited or subjective. Furthermore, a nonclinical sample was used in this study. Participants were not receiving treatment but rather reflecting on a superficial and resolved problem. While limiting the generalizability of findings, the use of a nonclinical sample may have resulted in weaker associations between clinician-rated CBT attitudes and SUITS scores than would be found in a clinical sample. In the context of the sample used in this study, the reported results represent promising evidence for the validity of the SUITS.

The concurrent criterion validity of the SUITS would be more conclusively established using clinical sample where clinicians rate early therapy sessions for attitudes that reflect CBT skills. Future research replicating the findings of the criterion validity of the SUITS in a clinical sample would confirm the promising results found in this study.

Additionally, the data used to investigate the criterion validity of the SUITS was collected after repeated prior administrations of the SUITS. Therefore, it is possible that previous exposure to the items impacted results. Moderate to good test-retest reliability found in the study suggests that this explanation may not be warranted, but possible variability between the initially recruited sample and those returning to complete the criterion validity discussion means that results may not generalize to first-time respondents of the survey. Investigating the criterion validity of the SUITS with first-time respondents will be important in confirming the psychometric properties of the instrument.

Conclusion

Overall, this study has provided further evidence to support previous research investigating the reliability and validity of the SUITS. Results suggest that the SUITS is a psychometrically sound measure of pre-treatment CBT-like attitudes. Specifically this paper has provided evidence for the satisfactory test-retest reliability of the SUITS. In addition, clear evidence for the discriminant construct validity of the SUITS when measuring social desirability has been provided. Importantly, strong evidence for the concurrent criterion validity of the SUITS has been found, with self-reported attitudes that reflect CBT skills (i.e., SUITS scores) predicting clinician ratings of expressed CBT attitudes. Results suggest that research using the SUITS within clinical samples is justified.

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Chapter 5

Attitudes aligned with CBT in a treatment-seeking sample: The factor structure of the Skills Used In Therapy Survey (SUITS)

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Author contribution:

Mrs. Lauren McLellan was solely responsible for the design of the research, collection and entry of data, and the analysis and write-up of this paper. Dr. Peters provided statistical and research supervision.

Attitudes aligned with CBT in a treatment-seeking sample: The factor structure of the Skills Used In Therapy Survey (SUITS)

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Abstract

The Skills Used In Therapy Survey (SUITS) is an instrument with two scales (Self and General) designed to measure pre-treatment attitudes aligned with cognitive behavior therapy (CBT). This study aimed to further investigate the psychometric strength of the SUITS by examining the factor structures of the SUITS Self and SUITS General within the instrument's intended sample; a treatment-seeking sample. Two hundred and thirty five participants interested in or seeking treatment were recruited for the study and completed the SUITS and demographic questions via an online survey. A second order total score and three factor structure found in previous research was replicated for both the SUITS Self and SUITS General in the current treatment-seeking sample. Confirmatory factor analysis results represented good model fit for the SUITS Self and reasonable model fit for the SUITS General. The relationships between SUITS scores and demographic variables, as well as prior knowledge of CBT, were consistent with previous research in university and community samples. The current results demonstrate the psychometric strength of the SUITS within a treatment-seeking sample and indicate that research using the SUITS within a clinical sample is appropriate.

cognitive behavior therapy, suitability, client characteristics

Attitudes aligned with CBT in a treatment-seeking sample: The factor structure of the Skills Used In Therapy Survey (SUITS)

Cognitive behavior therapy (CBT) is a widely used treatment that is considered efficacious based on a large body of literature (see Butler, Chapman, Forman, & Beck, 2006 for a review). Yet, individuals differ in their response to treatment. As a result, research has examined predictors of treatment outcome for CBT in order to continue to improve engagement with therapy and response rates (e.g., Eskildsen, Hougaard, & Rosenberg, 2010; Keeley, Storch, Merlo, & Geffken, 2008). Research has identified severity of pre-treatment symptoms as the best predictor of CBT outcome (Eskildsen et al., 2010; Keeley et al., 2008). Attitude differences between clients have been investigated as possible predictors of CBT outcome, but with a narrow focus. Research has primarily focused on investigating whether differences in attitudes towards symptoms predict treatment outcome (e.g., expectancy for symptom change, motivation for symptom change, or credibility of treatment in order to achieve symptom change).

Recent research has suggested extending the attitude differences that are investigated as predictors of treatment outcome to acknowledge the difference between clients in broad attitudes (i.e., attitudes beyond symptoms or expected success of the prescribed treatment in changing symptoms). Specifically, researchers have suggested that individual differences in pre-treatment attitudes that reflect therapy skills may represent an important but currently unexamined predictor of treatment engagement or outcome (McLellan, Peters, & Rapee, 2012). Broad pre-treatment CBT-like attitudes have been considered to reflect a philosophical match between an individual's broad mindset and the therapeutic framework of CBT. As a preliminary step towards investigating pre-treatment CBT-like attitudes as a predictor of CBT outcome a self-report instrument, named the Skills Used In Therapy Survey (SUITS), has been developed to measure pre-treatment CBT-aligned attitudes. The instrument contains two scales. The SUITS Self measures personal agreement with CBT attitudes and skills, while the

SUITS General measures general awareness of CBT skills or the awareness that others may hold attitudes that reflect CBT skills. Developing a psychometrically sound measurement tool is an important preliminary step in enabling the empirical investigation of whether individual differences in pre-treatment CBT-like attitudes predict treatment outcome.

Initial evidence for the factor structure of the SUITS was provided using a large university sample. These results were strengthened by consistent findings in a community sample (McLellan, Peters, & Rapee, 2012). Results presented by McLellan and colleagues indicated that responses to both the SUITS Self and SUITS General could be appropriately summarized by a total score in addition to three factor scores. Factor scores were considered to reflect CBT-like attitudes that represented the causal role of thinking in determining emotions and behavior (Thinking), awareness and reflection on internal processes (Insight) and flexibility and learning from experiences and behavior (Behavior; McLellan, Peters, & Rapee, 2012).

The reliability and validity of the SUITS has been comprehensively researched in a range of studies using community and university samples. Promising reliability results have been found supporting the internal consistency and temporal stability of the SUITS (McLellan & Peters, 2012; McLellan, Peters, & Rapee, 2012). Research examining the validity of the SUITS has found that scores were not related to demographic variables in a university sample. However, SUITS Self total scores were higher for females and SUITS Self Insight was related to level of education in a community sample. Additionally, as expected, research suggests that SUITS scores were related to prior knowledge of CBT (McLellan, Peters, & Rapee, 2012). Importantly, SUITS scores have typically not been found to relate to psychological symptoms, particularly depression and anxiety. Furthermore, when small associations were found they were negative in direction (McLellan, Peters, & Rapee, 2012). SUITS scores were also found to be unrelated to the personality domain most closely related to psychopathology, emotional stability (McLellan, Peters, & Rapee, 2012). The exception to

these expected results was for one initial SUITS Self factor representing awareness of bodily sensations that was found to positively correlate with psychopathology and was thus removed from the survey. Importantly, SUITS scores have not been associated with socially desirable responding (McLellan & Peters, 2012) or verbal reasoning (McLellan, Peters, & Romano, 2012).

Research suggests that SUITS scores are positively associated with the personality domain considered to reflect CBT-skills (Openness to Experience), and a construct that represents the ability to engage in general psychotherapy by measuring levels of reflection on internal processes (psychological mindedness), providing further evidence for the construct validity of the SUITS (McLellan, Peters, & Rapee, 2012). SUITS scores have also been investigated in relation to constructs considered to reflect adaptive functioning; emotional intelligence and task focused coping. While limited evidence was found for the construct validity of the SUITS Thinking factor, the other SUITS total and factor scores demonstrated expected associations with adaptive constructs (McLellan, Peters, & Rapee, 2012). The construct validity of the SUITS, especially the SUITS Thinking factors have been demonstrated against adaptive cognitive constructs. Strongest results for the construct validity of the SUITS and SUITS Thinking factors were found for constructs considered to measure cognitively focused CBT skills, for example, cognitive flexibility (McLellan, Peters, & Romano, 2012). SUITS scores have also been examined in relation to constructs associated with CBT outcome. SUITS Self and SUITS General total scores and specifically SUITS Self and SUITS General Thinking factor scores were found to predict credibility ratings of CBT, even after controlling for psychological symptoms, providing preliminary evidence for the criterion and incremental validity of the SUITS within a nonclinical sample (McLellan, Peters, & Rapee, 2012). Overall strong evidence for the reliability and validity of the SUITS has been demonstrated in a range of studies (McLellan, Peters, & Rapee, 2012; McLellan, Peters, & Romano, 2012; McLellan & Peters, 2012)

While previous research has investigated the factor structure of the SUITS within university and community samples, examining the structure within its intended sample would provide the strongest evidence for the psychometric strength of the scales. For the SUITS the intended sample is individuals interested in receiving psychological treatment. The primary aim of the current study was to investigate the factor structure of the SUITS within a sample of participants interested in or seeking psychological treatment. In addition, the secondary aim of the study was to provide information about the relationship between SUITS scores and demographic variables within a treatment-seeking sample. It was hypothesized that the second order total score and three factor structure of the SUITS Self and SUITS General would be confirmed within the intended sample of individuals interested in treatment. It was also hypothesized that demographic variables would not be related to SUITS scores except for positive relationships between SUITS scores and prior knowledge of CBT.

Method

Participants

Two hundred and thirty five participants were recruited for this study. To increase the likelihood that participants were interested in or seeking treatment, with the aim of recruiting participants early in treatment, advertisements for the study were placed in psychology and medical clinics or practices, online support groups for sufferers of mental illness and their carers, and on mental health websites. As an incentive for involvement in the study participants could elect to enter a monthly prize draw. Participants ranged in age from 18 to 67 years (M = 30.76 and SD = 11.62 years), and 79.1% were female. The majority of participants appeared to have completed the study early in treatment with over half reporting that they had not yet received treatment (58%[1]). In addition, 44% of participants indicated that they had not received psychological treatment in the past. Because more than half the participants in the study had experience with prior psychological interventions, reports of

[1] Information about current treatment was not available for two participants.

prior CBT knowledge were collected to investigate the influence of previous experience with or knowledge of CBT on SUITS scores.

Measures

Pre-treatment CBT-like attitudes. The two scales (Self and General) of the Skills Used In Therapy Survey (SUITS) were used to measure pre-treatment CBT-like attitudes (McLellan, Peters & Rapee, 2012). The SUITS Self (13 items) measures personal attitudes that reflect CBT skills while the SUITS General (14 items) measures general awareness of CBT skills. Items are rated by participants according to their level of agreement along a five-point Likert scale ranging from 1 (*strongly disagree)* to 5 (s*trongly agree*). Total and three factor scores were calculated for each SUITS scale. Factors measure the importance of thinking in determining emotional and behavioral responses (Thinking), awareness and reflection on internal processes (Insight), and behavioral experimentation and learning from experiences (Behavior). A strong factor structure has previously been reported in university and community samples (McLellan, Peters, & Rapee, 2012). Promising evidence for the construct and incremental validity of the SUITS has been presented in previous research (McLellan & Peters, 2012; McLellan, Peters, & Rapee, 2012; McLellan, Peters, & Romano, 2012) along with preliminary evidence for the criterion validity of the SUITS (McLellan & Peters, 2012; McLellan, Peters, & Rapee, 2012). Adequate test-retest reliability has also been reported (McLellan & Peters, 2012). The internal consistency in the current sample reflects previously reported levels within a community sample using an online delivery method and was between $\alpha = .62$ and $\alpha = .80$ for the SUITS Self, and $\alpha = .73$ and $\alpha = .87$ for the SUITS General.

Demographic variables. Along with gathering information about the age and gender of each participant, this study measured highest level of education, employment status, and knowledge of CBT (rated along a five-point scale; *none, minimal, some, substantial,* and *extensive*). Knowledge of CBT was treated as a continuous variable throughout the study and

reflects knowledge gathered through direct experience with treatment (whether positive or negative), or general education.

Procedure

The study procedures were approved by the Macquarie University Human Research Ethics Committee. Participants responded to advertisements for the study by accessing a provided web link. After providing consent participants completed the study online using their own computers. The online survey was hosted by Survey Gizmo.

Results

Confirmatory Factor Analysis

Confirmatory factor analysis (CFA) was conducted to evaluate the stability of the factor structure of the SUITS within a sample interested in or receiving treatment, representing the intended sample of use for the SUITS. The Tucker-Lewis Index (TLI), the Comparative Fit Index (CFI), and the Root Mean Square Error of Approximation (RMSEA) were inspected to evaluate the goodness of fit for each of the tested models. According to recommendations in the literature, TLI and CFI greater than .90 and RMSEA below .08 were considered to indicate the lower bounds of a reasonable model fit, and TLI and CFI greater than .95 and RMSEA below .06 were considered to indicate good fit (Vandenberg & Lance, 2000).

Models were tested separately for the SUITS Self and SUITS General using AMOS (version 19). Second order factor (total score) models were tested, consistent with previously reported versions of the SUITS scales (McLellan, Peters, & Rapee, 2012), in order to represent the relationship between the three factors within each SUITS scale.

SUITS Self. In line with previous confirmatory factor analytic procedures and recommendations in the literature (Cole, Ciesla, & Steiger, 2007) correlations between item error terms were permitted due to method effects, i.e., similar item format or wording, for three pairs of items within the same SUITS scale factor (items 1 & 2, 3 & 5 and 7 & 10). The

error term for the Behavior factor initially returned a negative loading resulting in an inadmissible solution for the model, so it was necessary to set the variance of this error term to zero. The results of the total score and three factor solution for the SUITS Self are presented in Figure 1. All items on the SUITS Self loaded significantly onto their assigned factor and factors loaded significantly ($p < .01$) onto the scale total score. As hypothesized the second order three factor solution revealed good model fit (TLI = .95, CFI = .96, and RMSEA = .05), supporting the strong factor structure of the SUITS Self within a treatment-seeking sample. The quality of the final fit indices and estimates in the SUITS Self model indicate that the initial negative variance for the SUITS Self Behavior factor was unlikely to be a result of a model misspecification.

SUITS General. For the SUITS General, one correlation between item error terms was permitted due to method effects (items 6 & 9). The results of the total score and three factor solution are presented in Figure 2. All factors loaded significantly ($p < .01$) onto the scale total score and all items on the SUITS General loaded significantly onto their assigned factor. The second order three factor solution revealed adequate model fit for all indicators except the TLI (TLI = .89, CFI = .91, and RMSEA = .08), replicating the factor structure of the scale in a treatment seeking sample.

SUITS and Demographic Variables

Table 1 provides basic descriptive statistics for SUITS total and factor scores and the continuous demographic variables age and prior CBT knowledge. Correlations between age and prior CBT knowledge and SUITS total and factor scores are also reported in Table 1. SUITS total and factor scores were not significantly correlated with age. SUITS Self scores, apart from the SUITS Self Thinking factor, were correlated with prior CBT knowledge, whereas SUITS General Insight was the only SUITS General score correlated with prior CBT knowledge.

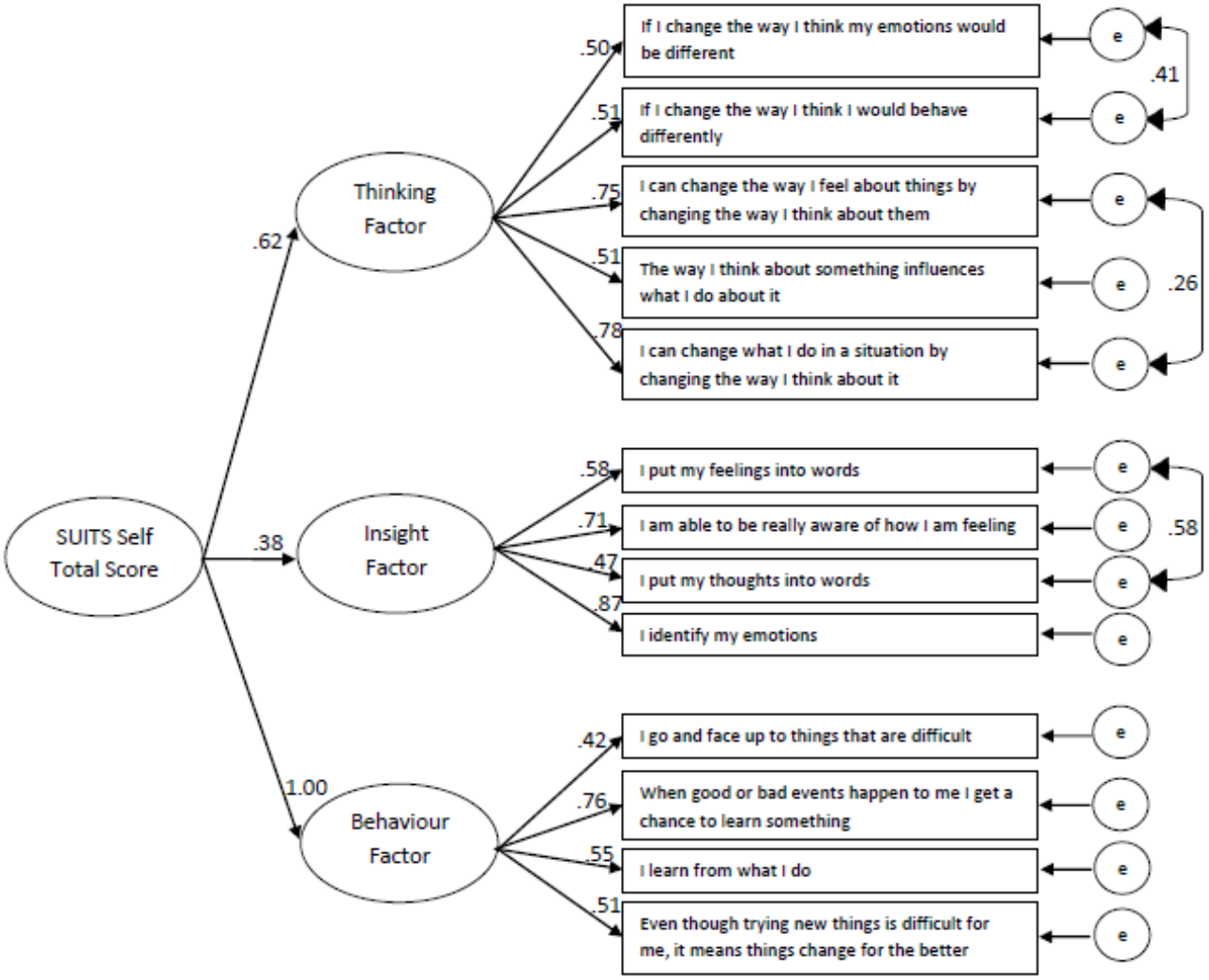

Figure 1. Graphical representation of the three-factor structure of the Skills Used In Therapy Survey - Self from confirmatory factor analysis. Values represent standardized robust maximum likelihood parameter estimates.

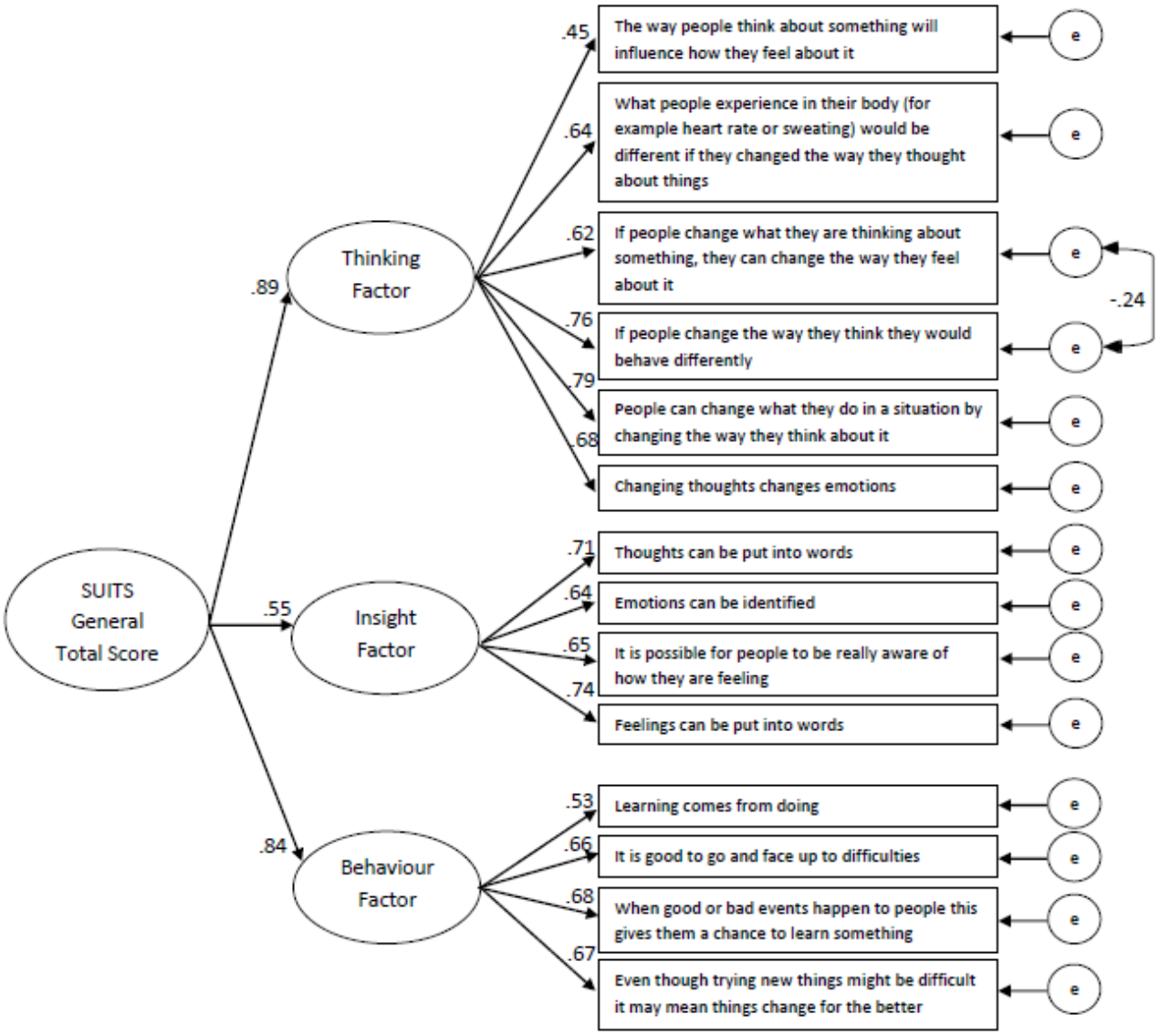

Figure 2. Graphical representation of the three-factor structure of the Skills Used In Therapy Survey – General from confirmatory factor analysis. Values represent standardized robust maximum likelihood parameter estimates.

Table 1

Mean and Standard Deviation for Study Variables and Correlations between SUITS Total and Factor Scores and Age and CBT Knowledge (N = 235)

Source	Mean	SD	r (age)	r (CBT knowledge)
Age	32.76	11.62	–	
Prior CBT Knowledge	1.95	1.07	.09	–
Skills Used In Therapy Survey - Self				
Total	49.14	6.17	.10	.17**
Thinking	19.87	2.97	.06	-.02
Insight	14.17	3.24	.08	.25**
Behavior	15.11	2.38	.08	.13*
Skills Used In Therapy Survey - General				
Total	56.38	6.22	.05	.10
Thinking	23.84	3.33	.06	.01
Insight	15.94	2.35	.08	.19**
Behavior	16.59	2.01	-.04	.07

* = $p < .05$, ** = $p < .01$

Table 2 presents mean and standard deviations for SUITS Self and SUITS General total and factor scores, by gender, level of education, and employment. Alpha was set at .05 for SUITS total scores and .02 for SUITS factor scores, given the three comparisons required to test differences for SUITS factor scores within each scale. SUITS scores were not significantly different for males and females, nor were SUITS scores different based on the highest level of education or level of employment reported by participants (p values for SUITS total scores were all > .05; p values for all SUITS factor scores > .02).

Table 2

Descriptive Statistics for Skills Used In Therapy Survey (SUITS) Scores by Categorical Demographic Variables (SD in parentheses, N = 235)

	Gender		Education			Employment				
	Males	Females	High school or below	Certificate or diploma	Bachelor degree or higher	Full Time Work	Part Time Work	Not Looking for Paid Work	Unemployed due to disability	Unemployed
SUITS Self										
Total	48.59 (6.18)	49.29 (6.18)	49.46 (5.58)	48.02 (7.76)	49.57 (5.48)	49.22 (6.13)	49.76 (5.97)	50.02 (6.13)	47.80 (6.78)	46.15 (5.59)
Thinking	19.92 (2.84)	19.85 (3.01)	20.25 (2.63)	19.70 (3.24)	19.74 (3.01)	19.95 (2.41)	20.12 (2.90)	20.25 (2.83)	18.45 (4.51)	19.12 (3.06)
Insight	13.71 (3.38)	14.28 (3.20)	14.23 (3.03)	13.63 (3.49)	14.42 (3.22)	14.13 (3.60)	14.57 (3.18)	14.21 (3.00)	14.50 (3.04)	13.19 (3.35)
Behavior	14.96 (2.27)	15.15 (2.41)	14.98 (2.10)	14.68 (2.83)	15.42 (2.25)	15.14 (2.15)	15.07 (2.29)	15.56 (2.51)	14.85 (2.54)	13.85 (2.19)
SUITS General										
Total	56.43 (5.62)	56.37 (6.38)	56.51 (6.06)	55.70 (7.12)	56.67 (5.80)	57.13 (5.99)	57.00 (5.05)	56.33 (6.63)	54.90 (7.20)	54.85 (6.29)
Thinking	24.00 (3.30)	23.80 (3.35)	23.98 (3.05)	23.50 (3.76)	23.95 (3.27)	24.19 (2.87)	24.45 (2.64)	23.71 (3.41)	23.00 (4.57)	23.08 (3.93)
Insight	15.94 (2.09)	15.95 (2.42)	16.00 (2.18)	15.82 (2.29)	15.98 (2.49)	16.21 (2.32)	15.88 (2.12)	15.89 (2.63)	15.90 (2.25)	15.62 (1.94)
Behavior	16.49 (1.98)	16.62 (2.02)	16.52 (2.12)	16.38 (2.08)	16.75 (1.90)	16.73 (1.86)	16.67 (2.08)	16.73 (2.14)	16.00 (1.84)	16.15 (1.89)

Discussion

It was hypothesized that the factorial structure of the SUITS scales would be confirmed in a treatment-seeking sample, the sample that the SUITS was developed to be used in. CFA revealed reasonable to good model fit for the SUITS second order, three factor structure. Results indicated a stronger factor structure for the SUITS Self than the SUITS General in a treatment-seeking sample. Together with previous results investigating the factor structure of the SUITS in university and community samples (McLellan, Peters & Rapee, 2012) these results demonstrate the strong factor structure of the SUITS. Confirmation of the factor structure of the SUITS in this study is an important finding as this study is the first to investigate the psychometric properties of the SUITS in a sample more closely resembling a clinical sample, and one that reflects the sample for which the SUITS was developed to be used.

It was hypothesized that SUITS (Self and General) total and factor scores would not be related to demographic variables but that SUITS scores would be related to knowledge of CBT. As expected age, gender, and education level were not found to be associated with SUITS scores, supporting previous research where SUITS scores were found to be unrelated to demographic variables in university samples (McLellan & Peters, 2012; McLellan, Peters, & Rapee, 2012). The findings that SUITS scores are not related to demographic variables in a community treatment-seeking sample are particularly promising given previous research in a general community sample that found some SUITS Self scores were related to gender and education level (McLellan, Peters, & Rapee, 2012). Given some inconsistency in findings regarding the relationship between SUITS scores and demographic variables, particularly within community samples, future research within community or treatment samples should continue to investigate the relationship between SUITS scores and demographic variables. However, it is promising that SUITS scores were not found to be associated with

demographic variables in the first study utilizing the SUITS within a treatment-seeking sample.

As expected prior CBT knowledge was found to be related to SUITS scores, confirming results in previous research using university and community samples (McLellan & Peters, 2012; McLellan, Peters, & Rapee, 2012). SUITS Self scores were more consistently related to CBT knowledge than SUITS General scores, reflecting the personal focus of the SUITS Self which would be expected to more closely reflect an individual's knowledge and experiences. This supports the distinct aspects of CBT attitudes measured by the two SUITS scales. However, it is important to note that scores on the SUITS are not purely a measure of prior CBT knowledge but are reflecting attitudes that go beyond treatment knowledge. Importantly, significant correlations were small suggesting that previous experience with CBT or CBT knowledge is not strongly related to SUITS scores.

In a treatment-seeking sample it appears that attitudes reflecting cognitive mediation of behavior and emotion (Thinking factor) are unrelated to knowledge of CBT. This factor may be particularly important in determining suitability for therapy as it appears unaffected by knowledge or experience with treatment. Previous research suggests that the SUITS Thinking factor has a strong relationship with constructs relevant to CBT, for example, CBT credibility ratings (McLellan, Peters, & Rapee, 2012).

Overall the current study provides important evidence to suggest that the previously reported total score and three factor structure of the SUITS Self and SUITS General also represents a reasonable factor structure within a sample of participants interested in or seeking treatment. The current results confirming the factor structure of the SUITS within a sample intending to seek treatment, together with previous research supporting the psychometric strength of both SUITS scales, suggests that research using the SUITS within a clinical sample is appropriate. Importantly, future research within clinical samples should examine whether pre-treatment CBT-like attitudes predict treatment engagement and response.

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Chapter 6

Do pre-treatment CBT-like attitudes predict outcome?

This chapter has been prepared for submission to Behaviour Research and Therapy.

Author contribution:

Mrs. Lauren McLellan was solely responsible for the design of the study, and the analysis and write-up of this paper. She assisted with the clinical procedures of both clinical trials. Dr. Peters provided statistical and research supervision and was the chief investigator of the first clinical trial used within this study. Associate Professor Baillie was the chief investigator of the second clinical trial used within this study. Dr. Stapinski provided academic supervision and was the post-doctoral research fellow employed to manage the second clinical trial used within this study.

Do pre-treatment CBT-like attitudes predict outcome?

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Abstract

This study investigated whether individual differences in pre-treatment attitudes aligned with CBT skills predicts cognitive behaviour therapy (CBT) engagement and outcome within a clinical sample of adults diagnosed with social phobia (N = 132). The Skills Used In Therapy Survey (SUITS) (Self and General), was used to measure pre-treatment CBT-like attitudes. Strong evidence for the psychometric properties of the scales was found within the clinical sample. In particular, pre-treatment CBT-like attitudes, measured using the SUITS Self, were found to predict social anxiety symptoms post-treatment and three months following treatment, but not treatment engagement. Furthermore, pre-treatment CBT-like attitudes reflecting a broad philosophical match with CBT were found to predict CBT outcome over and above motivation for change, expectancy for change, and treatment credibility at post-treatment but not three month follow-up. Results suggest that individual differences in broad pre-treatment CBT-like attitudes are a promising predictor of CBT outcome that has the potential to inform clinical practice to improve treatment outcome for more clients.

cognitive behaviour therapy, treatment outcome, individual differences, predictors of outcome, client characteristics, suitability

Do pre-treatment CBT-like attitudes predict outcome?

Research indicates that cognitive behaviour therapy (CBT) is an efficacious treatment for a range of psychological disorders, particularly anxiety disorders like social phobia (Butler, Chapman, Forman, & Beck, 2006; Norton & Price, 2007; Rodebaugh, Holaway, & Heimberg, 2004). Effect sizes are generally moderate to large when CBT is compared to waitlist, alternative therapies, or routine care. Efficacy rates for CBT are particularly promising when the maintenance of symptom reduction over time is assessed (see Butler et al., 2006 for a review). Evidence suggests that CBT is also an effective intervention in naturalistic clinical settings and beyond the often strict inclusion criteria of clinical research trials (McEvoy, 2007; McEvoy & Nathan, 2007; Persons, Bostrom, & Bertagnolli, 1999; Rosenberg & Hougaard, 2005; Stuart, Treat, & Wade, 2000; Westbrook & Hill, 1998; Westbrook & Kirk, 2005). Overall, CBT has been endorsed as an empirically supported intervention (Chambless & Ollendick, 2001).

However, while efficacious, empirical data indicate that CBT does not work equally well for all clients. Retention rates, adherence, and response to treatment are not optimal. Dropout rates for CBT vary based on definition but range from 6.3% to 60% (see Bados, Balaguer, & Saldana, 2007 and Salmoiraghi & Sambhi, 2010 for reviews). Additionally, between 16% and 50% of patients who receive CBT will not report clinically significant improvement (Borkovec, Newman, & Castonguay, 2004; Liebowitz et al., 1999; Lincoln et al., 2005). As a result, research has attempted to identify individual differences that predict engagement and response to treatment. The goals of research investigating predictors of treatment outcome are to determine suitability for CBT, identify barriers that can be addressed prior to the commencement of CBT, or inform modifications to standard CBT protocols in order to optimise treatment effectiveness for all clients.

Mixed results have been found in studies examining demographic variables as predictors of CBT outcome. As a result, reviews across a range of disorders suggest that

demographic variables do not appear to consistently predict response to CBT (Eskildsen, Hougaard, & Rosenberg, 2010; Hamilton & Dobson, 2002; Keeley, Storch, Merlo, & Geffken, 2008; Solvason, Ernst, & Roth, 2003; Steketee & Shapiro, 1995). In contrast, disorder characteristics, for example, subtype of social phobia (Brown, Heimberg, & Juster, 1995; Hope, Herbert, & White, 1995; Turner, Beidel, Wolff, Spaulding, & Jacob, 1996), or obsessive compulsive disorder (Keeley et al., 2008), comorbidity (either depression/anxiety or Axis II comorbidity; Chambless, Tran, & Glass, 1997; Eskildsen et al., 2010; Keeley et al., 2008; Ong et al., 2008; Rodebaugh et al., 2004; Solvason et al., 2003; Steketee & Shapiro, 1995), and symptom severity (Eskildsen et al., 2010; Hamilton & Dobson, 2002; Kampman, Keijsers, Hoogduin, & Hendriks, 2008; Keeley et al., 2008; Ong, Kuo, & Manber, 2008) more consistently predict poorer CBT treatment outcome. Although symptom or disorder severity appears to be the most consistent predictor of CBT outcome across a range of psychological disorders (Eskildsen et al., 2010; Keeley et al., 2008; Solvason et al., 2003), it does not always predict degree of improvement (Rodebaugh et al., 2004). Furthermore, the identification of symptom severity as a predictor of treatment outcome serves little value in attempts to improve response to CBT for more clients since the presenting problem is already used to select treatment. At best, research reporting that symptom severity predicts outcome has lead to recommendations to extend the length of treatment for clients with greater symptom severity prior to treatment (Hamilton & Dobson, 2002).

Attitude differences between clients have also been investigated as possible predictors of CBT outcome (Federici, Rowa, & Antony, 2010). Attitudes commonly examined as predictors of outcome are attitudes that are a) at odds with the therapeutic framework, and therefore indicate a potential obstacle for effective therapy, and b) aligned with the therapeutic framework, and therefore indicate an attitudinal match with therapy. However, research has focused on investigating predictors that relate to attitudes about symptom change, for example, expectancy and motivation for symptom change, or attitudes about

symptom change as a result of the presented treatment, i.e., treatment credibility. As a result, the primary focus of research investigating attitude differences between clients has been symptom-focused attitudes; i.e., attitudes about whether symptom change is wanted, possible, and/or likely in general or as a result of the specifically prescribed treatment.

These symptom-focused attitude differences have at times been found to predict outcome following treatment (Abramowitz, Franklin, Zoellner, & Di Bernardo, 2002; Addis & Jacobson, 2000; Ahmed & Westra, 2008; Borkovec, Newman, Pincus, & Lytle, 2002; Chambless et al., 1997; Constantino, Arnkoff, Glass, Ametrano, & Smith, 2011; de Haan et al., 1997; Fennell & Teasdale, 1987; Glass, Arnkoff, & Shapiro, 2001; Hellstrom & Ost, 1996; Keeley et al., 2008; Keijsers, Hoogduin, & Schaap, 1994a, 1994b; Keijsers, Kampman, & Hoogduin, 2001; Kirsh & Henry, 1977; Ost, Stridh, & Wolf, 1998; Price, Anderson, Henrich, & Rothbaum, 2008; Safren, Heimberg, & Juster, 1997; Smeets et al., 2008; Steketee et al., 2011). Certainly, individual differences in pre-treatment attitudes represent an important domain of potential predictors of outcome, since attitudes can be addressed in therapy. Therefore attitude factors are prognostic indicators that can result in meaningful changes to clinical practice and as a result improvement in outcome for more clients.

Although attitude differences have been found to predict CBT outcome, at times, negative findings have also been reported (Borkovec & Mathews, 1988; Borkovec et al., 2002; Chambless et al., 1997; Devilly & Borkovec, 2000; Kampman et al., 2008; Keijsers et al., 1994b; Price et al., 2008; Safren et al., 1997; Smith, Norton, & McLean, 2012; Vogel, Hansen, Stiles, & Gotestam, 2006; Wolk & Devlin, 2001). Recent research appears mixed, compared to earlier studies (Price et al., 2008). One possible explanation for the increasingly mixed findings is the tendency in recent literature to control for pre-treatment symptom severity (Borkovec et al., 2002; Chambless et al., 1997; Safren et al., 1997; Vogel et al., 2006). Therefore, the predictive ability of symptom-focused attitudes found in earlier studies may be attributable, in part, to differences in symptom severity. This limits the value of

identification of these factors as predictors of outcome, since symptom severity is already a consistent predictor of outcome and is already used for treatment selection. Regardless of the statistical association between symptom-focussed attitudes and symptom severity, the focus on symptom-attitudes presents only a narrow conceptualisation of clients. Researchers have been encouraged to acknowledge that the individual is more than their disorder (Norcross & Wampold, 2011). Assessing broader attitudes (i.e., those not specifically related to symptoms and symptom change) would allow a broader conceptualisation of clients to be represented in research investigating predictors of outcome. Furthermore, examining broader attitude differences between clients has the potential to identify prognostic predictors that are not tied up with symptom severity, and therefore produce more consistent results. Investigating broad attitudes, that are not symptom-focused, as predictors of outcome may provide new avenues for treatment pre-preparation or selection, and therefore facilitate improvement in CBT outcome for more clients.

Just as research has identified symptom-focused attitudes that are at odds with the therapeutic framework, broad attitudes that are at odds with the therapeutic framework may be expected to represent a potential obstacle to treatment. On the other hand, individuals whose broad attitudes about the cause and mediators of emotions and behaviour are philosophically aligned with treatment may be expected to engage or respond better to therapy. Therefore, one avenue for investigating broad attitudes (i.e., not symptom-focused attitudes specifically, but more global attitudes or overall life beliefs) that might affect suitability for treatment or predict outcome would be to assess pre-treatment attitudes that are consistent with CBT. Client's who hold broad attitudes that are consistent with CBT, but are unable to apply these CBT-like attitudes to their presenting problem would still report symptoms. For example, an individual may generally believe that thoughts lead to emotions, yet they may be unable to identify that their thought about being negatively evaluated by others leads to the social anxiety they experience. Yet, individuals who hold broad attitudes

aligned with treatment would be expected to respond better to CBT than those whose broad attitudes prior to treatment are not closely aligned to therapy. Individual differences in pre-treatment CBT-like attitudes therefore represent a broad attitude factor that may predict treatment outcome or determine suitability for CBT.

A psychometrically sound instrument to measure pre-treatment CBT-like attitudes has been developed in previous research. McLellan, Peters, and Rapee (2012) report on the development of a short self-report tool, named the Skills Used In Therapy Survey (SUITS), with two scales (SUITS Self and SUITS General). The SUITS measures attitudes that are consistent with the CBT model, for example, attitudes about the causal links between thoughts, emotions, and behaviour. Specifically, the SUITS Self measures personally held CBT-like attitudes, whereas the SUITS General measures a general awareness of CBT-like attitudes (e.g., identifying that others may hold CBT-like attitudes; McLellan, Peters, & Rapee, 2012). While findings suggest that this tool has promising psychometric properties (McLellan & Peters, 2012a; 2012b; McLellan, Peters, & Rapee, 2012; McLellan, Peters, & Romano, 2012), limited investigation has been conducted within clinical samples. Therefore, investigating the psychometric properties of the SUITS in a clinical sample is necessary in order to confirm the value of the tool. Research within clinical samples would also enable investigation of pre-treatment CBT-like attitudes as a predictor of CBT outcome and engagement.

The aim of this study, therefore, was to investigate the psychometric properties of the SUITS within a clinical sample of adults diagnosed with social phobia. In particular, this study investigates whether SUITS scores predict engagement in a CBT program and CBT outcome. This study also aims to provide information about whether broad pre-treatment CBT-like attitudes, measured by the SUITS, predict CBT outcome and engagement over and above symptom-focused attitudes, like treatment credibility, and expectancy and motivation for change. If the SUITS is found to predict treatment outcome it could be used with minimal

financial costs to determine suitability for therapy, or identify the need for preparatory work to build a greater understanding and credibility of the CBT rationale and skills before commencing standard CBT protocols.

A number of hypotheses were specified. The first was that SUITS scale scores would be unrelated to demographic variables and pre-treatment symptom severity, thus supporting the discriminant construct validity of the SUITS within a clinical sample. Second, it was hypothesised that SUITS scale scores would predict post and follow-up treatment symptom severity and therapy engagement. Finally, it was hypothesised that CBT-like attitudes measured by the SUITS would predict CBT outcome over and above previously identified symptom-focused attitude predictors; motivation for change, expectancy for change, and treatment credibility.

Method

Participants

One hundred and thirty two participants were recruited from two clinical trials. The first sample consisted of 50 clinical participants included in a trial investigating the role of preparatory sessions in improving response to group CBT for social phobia (Sample 1). Participants ranged in age from 19 to 56 years (M = 30.44, SD = 9.10) and 44% were female. For inclusion in the trial participants met Diagnostic and Statistical Manual of Mental Disorders (DSM-IV TR; American Psychiatric Association [APA], 2000) criteria for social phobia as determined by the Anxiety Disorders Interview Schedule – IV (ADIS-IV; Di Nardo, Brown, & Barlow, 1994) and reported at least moderate impairment caused by social phobia. Participants were excluded from the trial if there was evidence of active suicidal intent, comorbid psychosis, or a mood/substance use disorder was expected to interfere with treatment. All participants received twelve sessions of group cognitive behaviour therapy for social phobia through the Macquarie University Centre for Emotional Health. Participants recruited in 2010 (n = 27) received three sessions of individually delivered motivational

interviewing prior to the commencement of group treatment, while participants recruited in 2011 (n = 23) did not. A detailed description of the trial is provided by Peters, Gaston, Baillie, and Rapee (2012).

The second sample consisted of a subsample of participants eligible for a larger trial investigating the effectiveness of combining treatment for comorbid alcohol use disorders and social phobia compared to treating just the alcohol use disorder (Sample 2). Thirty five participants from the large trial did not complete the SUITS prior to treatment or had not yet completed the full course of treatment at the time of this study so were not included in the current sample. The 82 participants in this study ranged in age from 20 to 65 years (M = 37.11, SD = 11.36) and 38% were female. For inclusion in the trial participants met DSM-IV (APA, 2000) criteria for social phobia and alcohol abuse or alcohol dependence determined by completing a structured clinical interview (ADIS-IV; Di Nardo et al., 1994) and supplemented by questions to determine pattern and development of drinking (Miller, & Marlatt, 1984), quantity of drinking (Sobell, Maisto, Sobell, & Cooper, 1979; Sobell, Sobell, Leo, & Cancilla, 1988), and likely severity of withdrawal syndrome (Sullivan, Sykora, Schneiderman, Naranjo, & Sellers, 1989). Participants were excluded from the trial based on evidence of active suicidal intent, comorbid psychosis, severe cluster A or B personality disorders that were expected to interfere with treatment, dependence on benzodiazepines or substances other than tobacco, current injecting drug use, or a need for initial intensive detoxification from alcohol. All participants received nine individually delivered CBT sessions but were randomly allocated to treatment conditions, n = 38 received treatment for alcohol only although they also had a diagnosis of social phobia, while n = 44 received combined treatment for both alcohol use and social phobia. Treatment was delivered at two treatment sites, either the Macquarie University Centre for Emotional Health or the Royal Prince Alfred Hospital Drug Health Services. A detailed description of the trial is provided by Baillie et al. (2012).

Overall, participants in this study (N = 132) received CBT in one of four treatment conditions (group CBT with preparatory motivational interviewing, group CBT without preparatory motivational interviewing, individual CBT for alcohol problems only, or individual CBT for both alcohol and social phobia). The gender distribution across the four treatment conditions was not significantly different ($p > .05$), however the clinical participants receiving individualised CBT for alcohol use were found to be significantly older than the clinical participants receiving group CBT with or without preparatory motivational interviewing (Tukey HSD pairwise contrasts were significant, $F(3, 128) = 4.34$, $p < .01$). Self-reported severity of initial social anxiety was significantly different across the four treatment groups ($F(3, 128) = 3.62$, $p = .02$) with pairwise comparisons indicating that clinical participants receiving group CBT without preparatory motivational interviewing reported significantly higher social anxiety symptoms than the two groups of clinical participants receiving individualised CBT ($p < .05$).

Measures

Pre-treatment CBT-like attitudes. The two Skills Used In Therapy Survey (SUITS) scales (Self and General) were used to measure pre-treatment CBT-like attitudes. The two scales measure different domains of CBT attitudes. The SUITS Self measures personally held attitudes that match with CBT skills (e.g., "*The way I think about something influences what I do about it"*). The SUITS General measures general awareness of CBT skills and the ability to identify that others hold attitudes that match with CBT skills (e.g., "*If people change the way they think they would behave differently"*). Importantly, the SUITS measures broad attitudes that align with treatment. The SUITS Self and SUITS General contained 13 and 14 items respectively and were rated by participants according to their level of agreement using a five-point Likert scale ranging from 1 (*strongly disagree)* to 5 (*strongly agree*). Total and factor scores were calculated for both the SUITS Self and SUITS General according to the factor structure identified previously (McLellan, Peters, & Rapee, 2012). Factor scores

represented Thinking, Insight, and Behaviour domains of CBT. Specifically, the Thinking factor measured the role of thinking in determining behavioural and emotional experiences and responses, the Insight factor measured awareness of and the ability to express internal experiences, and the Behaviour factor measured flexibility and learning from behaviour and experiences. Fair to good internal consistency has been reported across university (McLellan & Peters, 2012a; McLellan, Peters, & Rapee, 2012; McLellan, Peters, & Romano, 2012) and community samples (McLellan & Peters, 2012b; McLellan, Peters, & Rapee, 2012).

Severity of social anxiety. The Social Interaction Anxiety Scale (SIAS; Mattick & Clarke, 1998) was used to measure social anxiety symptoms. The 20 self-report items were rated using a five-point Likert scale ranging from 0 (*not at all characteristic or true of me*) to 4 (*extremely characteristic or true of me*), such that higher scores reflected greater social anxiety. A total score was calculated from the sum of all items, which included three reverse scored items. Strong test retest reliability (Mattick & Clarke, 1998) and internal consistency (Heimberg, Mueller, Holt, Hope, & Liebowitz, 1992; Mattick & Clarke, 1998) have been reported with alphas ranging from .85 to .94. Adequate validity has been found comparing SIAS scores to other measures of social anxiety and across diagnostic groups (Heimberg et al., 1992; Mattick & Clarke, 1998).

CBT attendance. The number of CBT sessions attended by participants across all treatment groups was recorded as a method of measuring level of engagement with therapy. Given that participants completing individual therapy received a maximum of nine CBT sessions and participants completing group therapy received a maximum of 12 CBT sessions, an individual's attendance was recorded as a proportion of the maximum CBT they could receive.

Motivation for change. Participants completed the University of Rhode Island Change Assessment (URICA; McConnaughty, Prochaska, & Velicer, 1983) as a measure of motivation to change prior to receiving treatment. The 32 self-report items were rated on a

five-point Likert scale ranging from 1 (*strongly disagree)* to 5 (*strongly agree)* with eight items measuring each of the Precontemplation, Contemplation, Action, and Maintenance stages of change. In order to represent the different patterns of responses to these stages of change a Readiness for Change Index (RCI) was calculated whereby the mean Precontemplation score was subtracted from the mean of the Contemplation, Action, and Maintenance scores, in accordance with previous research (Carpenter, Miele, & Hasin, 2002; DiClemente, Schlundt, & Gemmell, 2004; Vogel et al., 2006).

Expectancy for change. Participants completed the Anxiety Change Expectancy Scale (ACES; Dozois & Westra, 2005) as a measure of belief in the ability to change anxiety symptoms or expectancy for anxiety change. The 20 self-report items were rated for agreement on a five-point Likert scale ranging from 1 (*strongly disagree)* to 5 (*strongly agree)*, such that higher scores represented more positive beliefs and expectancy for change in anxiety. Strong reliability and validity results have been reported for the ACES in clinical samples (Dozois & Westra, 2005).

CBT credibility. Participants rated three items from the Credibility Expectancy Questionnaire (CEQ; Devilly & Borkovec, 2000) assessing credibility of the CBT model of treatment. The self-report items were rated on a 10-point Likert scale ranging from 1 (*not at all logical, useful, confident*) to 10 (*extremely logical, useful, confident*), such that higher scores reflected greater credibility in the CBT treatment model that had been described. Total CBT credibility scores were calculated by summing responses to the three items.

Procedure

The study procedures were approved by the Macquarie University Human Research Ethics Committee. Potential participants made contact with either research trial via a range of referral sources, including general practitioners, word of mouth advertising, and occasional media coverage. At first contact participants received a brief screening assessment over the phone. A subsequent structured clinical interview was used to confirm diagnostic status and

eligibility for the trial. Participants who met inclusion criteria were included in one of the two trials contributing data towards this study. Prior to treatment both samples completed self-report measures of pre-treatment CBT-like attitudes, severity of social anxiety symptoms, and expectancy and motivation for change. Clinical participants then began treatment. During the first session a CBT model was presented. Immediately after this session participants rated the credibility of the CBT model that had been explained. Approximately one month and three months after treatment participants again completed measures of social anxiety symptoms and CBT-like attitudes.

Statistical Analysis

Univariate descriptives were inspected for all variables. Transformations were performed for variables that were not normally distributed but are not reported because they did not impact the pattern of results. Internal consistency for SUITS Self and SUITS General total and factor scores were calculated using Cronbach's Alpha. Correlations were estimated between SUITS scores, and pre-treatment social anxiety severity. Differences in SUITS scores based on demographic variables were also investigated. In order to examine whether the SUITS predicted treatment outcome and treatment engagement, a series of hierarchical multiple regressions were conducted. Separate regressions were run for each dependent variable: (1) social anxiety post-treatment, (2) social anxiety severity three months following treatment, and (3) treatment engagement as indexed by the proportion of sessions attended. In each regression, variables were entered in two sequential blocks. Covariates were entered into block 1 of each regression. All analyses included baseline social anxiety as a covariate in order to examine treatment outcome and engagement adjusted for initial symptom levels. Treatment type was also entered as a covariate. The four treatment conditions were represented by three dummy variables with CBT without preparatory motivational interviewing used as the reference group. Additional covariates for each dependent variable were identified by examining bivariate relationships with demographic variables. Those with

significant bivariate relationships were included as covariates in block 1 of relevant regression models.

SUITS scores were entered in the second block. For each dependent variable, four different regression models were tested. These four models varied only in terms of the scoring of the SUITS scales entered in Block 2: (1) SUITS Self total score, (2) SUITS Self factor scores, (3) SUITS General total score, and (4) SUITS General factor scores.

Further hierarchical multiple regressions were run to investigate whether SUITS scores predicted outcome/engagement after controlling for existing symptom-focused attitude factors. When SUITS scale scores predicted outcome/engagement according to the above procedure the regression was re-run with an additional block of covariates entered prior to SUITS scale scores. The second block of covariates consisted of the three existing symptom-focused attitude individual differences examined in the study (motivation for symptom change, expectancy for symptom change, and treatment credibility).

Results

For analyses that required mean values, missing item values were replaced with the scale mean when at least 80% of items on a given scale were completed. Participants were excluded from relevant analyses when they completed less than 80% of items on a scale or did not provide data at a relevant post-treatment assessment time point[1]. Social anxiety data were available for 100% (N = 132) of participants at pre-treatment, 76% (n = 100) at post-treatment, and 66% (n = 87) at follow-up. An additional 12 participants (at post-treatment) and 10 participants (at follow-up) were missing data on one or more covariate measures.

Participants who provided complete outcome data immediately following treatment were more likely to be female ($\chi^2 = 5.87$, $p = .02$), and have received group CBT (with or without preparatory motivational interviewing; $\chi^2 = 8.17$, $p = .04$) compared to those who did not provide post outcome data. Participants were more likely to have provided outcome data

[1] Intention to treat analysis was not conducted since the purpose of this study was not to determine the efficacy of different treatment methods.

at three month follow-up if they received treatment for their social anxiety (either group CBT targeting social anxiety or individual CBT targeting combined alcohol and social anxiety; χ^2 = 9.05, p = .03), were female (χ^2 = 7.01, p < .01), were employed or not looking for work (χ^2 = 14.24, p < .01), or reported higher levels of initial social anxiety symptoms (χ^2 (1) = 4.64, p = .03). The same pattern of group differences emerged when the analysis was repeated to include those participants who also failed to provide information about covariates.

Preliminary Statistics

Mean and standard deviations and bivariate correlations are presented in Table 1 for all primary variables of interest. Good internal consistency was found within this clinical sample. Cronbach alphas ranged between .70 and .82 for the SUITS Self, and between .72 and .90 for the SUITS General.

Discriminant Validity

SUITS and demographic variables. No significant correlations were found between age and any SUITS total or factor scores (for SUITS Self, these correlations ranged from r (131) = -.15 to r = .15, and for SUITS General correlations ranged from r (131) = -.06 to r = .08; *ps* > .05). Furthermore, no significant differences were found between genders, highest level of education (coded as '*high school or below', 'certificate or diploma', 'bachelor degree or higher'*), or employment status (coded as *'full-time work', 'part time work', 'not looking for paid work', 'unemployed'*) on any SUITS total or factor scores (*ps* > .05).

SUITS and pre-treatment symptoms. Bivariate correlations between SIAS and SUITS total and factor scores prior to treatment are reported in Table 1. SUITS Self total score and SUITS Self Behavior factor score were significantly correlated with social anxiety (p < .05). Social anxiety was not significantly correlated with any other SUITS scale scores.

Table 1

Summary of Correlations, Means and Standard Deviations for Study Variables using Participants who Provided Data Prior to Treatment Commencing (N= 132)

Measure	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. SUITS Self Total	-														
2. SUITS Self Thinking	.75**	-													
3. SUITS Self Insight	.76**	.31**	-												
4. SUITS Self Behaviour	.75**	.42**	.31**	-											
5. SUITS General Total	.54**	.61**	.23*	.40**	-										
6. SUITS General Thinking	.47**	.60**	.17*	.31**	.91**	-									
7. SUITS General Insight	.42**	.40**	.29**	.25**	.78**	.55**	-								
8. SUITS General Behaviour	.48**	.50**	.15	.49**	.83**	.63**	.54**	-							
9. Pre SIAS	-.20*	-.15	-.13	-.19*	.06	.04	.11	.02	-						
10. ACES[a]	.57**	.42**	.37**	.50**	.41**	.32**	.36**	.40**	-.24**	-					
11. URICA	.18*	.15	.07	.21*	.30**	.17	.28**	.39**	.11	.28**	-				
12. CBT credibility rating[b]	.33**	.27**	.18	.30**	.38**	.24*	.40**	.37**	-.05	.38**	.38**	-			
13. Post SIAS[c]	-.40**	-.34**	-.27**	-.31**	-.16	-.11	-.11	-.19	.46**	-.34**	-.13	-.34**	-		
14. 3 month follow-up SIAS[d]	-.26*	-.24*	-.15	-.22*	-.10	-.04	-.10	-.14	.51**	-.44**	-.16	-.39**	.82**	-	
15. CBT attended (%)	-.04	-.15	.04	.01	.02	.00	.05	.02	.06	.14	.07	-.13	-.03	-.11	-
M	46.36	19.90	12.53	13.92	57.43	24.47	16.23	16.73	52.72	65.45	10.19	23.57	37.34	37.36	75.38
SD	6.55	2.70	3.29	2.73	5.57	3.00	1.71	1.83	11.94	10.60	1.36	3.92	14.64	14.84	35.56

Note. SUITS = Skills Used In Therapy Survey; SIAS = Social Interaction Anxiety Scale; ACES = Anxiety Change Expectancy Scale; URICA = University of Rhode Island Change Assessment; CBT = Cognitive Behaviour Therapy.

[a] $n = 130$.

[b] Collected following the first CBT session ($n = 108$).

[c] $n = 100$

[d] $n = 87$

* = $p < .05$, ** = $p < .01$

Prediction of Treatment Outcome

Treatment outcome. No bivariate relationships were found between demographic variables and post-treatment social anxiety symptoms. Age was negatively correlated with social anxiety scores three months following treatment ($r(85) = -.26$, $p < .01$), so age was the only demographic variable entered as an additional covariate in Block 1 of each regression model predicting social anxiety scores three months following treatment.

In combination, variables in the final blocks of all four regression models significantly predicted social anxiety symptoms at post-treatment (SUITS Self total: adjusted $R^2 = .34$, $F(5, 94) = 11.03$, $p < .01$; SUITS Self factors: adjusted $R^2 = .32$, $F(7, 92) = 7.74$, $p < .01$; SUITS General total: adjusted $R^2 = .26$, $F(5, 94) = 8.10$, $p < .01$; SUITS General factors: adjusted $R^2 = .26$, $F(7, 92) = 5.91$, $p < .01$) and three month follow-up (SUITS Self total: adjusted $R^2 = .39$, $F(6, 80) = 10.28$, $p < .01$; SUITS Self factors: adjusted $R^2 = .38$, $F(8, 78) = 7.62$, $p < .01$; SUITS General total: adjusted $R^2 = .36$, $F(6, 80) = 8.98$, $p < .01$; SUITS General factors: adjusted $R^2 = .35$, $F(8, 78) = 6.89$, $p < .01$). As shown in Table 2 and 3, only models with the addition of SUITS Self total or SUITS Self factor scores significantly improved prediction of social anxiety post-treatment scores over and above control variables entered in block 1. For three month follow-up social anxiety, only the model with the addition of the SUITS Self total score significantly increased the explained variance over and above the control variables. However, when examining the significant unique predictors in each final regression model only SUITS Self total score significantly predicted self-reported social anxiety at post and 3 month follow-up after controlling for other variables in the models. Individual SUITS factor scores did not uniquely predict outcome.

Table 2

Hierarchical Multiple Regression Analyses Predicting Social Anxiety Post-Treatment from SUITS Self and General Scores Controlling for Treatment Type & Initial Social Anxiety (n = 100).

Block	Variables	Δ F (df)	Δ R^2	p	β	p	η^2%
Regression 1							
1	1. Treatment Type1	9.23 (4, 95)	.280	**<.01**	-.148	.16	1.37
	2. Treatment Type3				-.005	.97	0.00
	3. Treatment Type4				-.267	**.02**	4.00
	4. Initial social anxiety				.376	**<.01**	11.83
2	1. SUITS Self Total	13.38 (1, 94)	.090	**<.01**	-.314	**<.01**	9.00
Regression 2							
1	1. Treatment Type1	9.23 (4, 95)	.280	**<.01**	-.146	.17	1.30
	2. Treatment Type3				.004	.97	0.00
	3. Treatment Type4				-.259	**.02**	3.61
	4. Initial social anxiety				.378	**<.01**	11.83
2	1. SUITS Self Thinking	4.41 (3, 92)	.091	**.01**	-.153	.11	1.80
	2. SUITS Self Insight				-.129	.17	1.30
	3. SUITS Self Behaviour				-.135	.16	2.22
Regression 3							
1	1. Treatment Type1	9.23 (4, 95)	.280	**<.01**	-.141	.20	1.23
	2. Treatment Type3				.058	.61	0.19
	3. Treatment Type4				-.196	.09	2.16
	4. Initial social anxiety				.473	**<.01**	19.98
2	1. SUITS General Total	2.84 (1, 94)	.021	.10	-.147	.10	2.10
Regression 4							
1	1. Treatment Type1	9.23 (4, 95)	.280	**<.01**	.149	.18	1.37
	2. Treatment Type3				.056	.63	0.18
	3. Treatment Type4				-.176	.14	1.69
	4. Initial social anxiety				.478	**<.01**	20.25
2	1. SUITS General Thinking	1.34 (3, 92)	.030	.27	.027	.82	0.04
	2. SUITS General Insight				-.047	.66	0.14
	3. SUITS General Behaviour				-.169	.16	1.54

Note. Columns reporting β, p and η^2% represent values for the final model (Block 1 & 2 together) for all regression models. SUITS = Skills Used In Therapy Survey.

Table 3

Hierarchical Multiple Regression Analyses Predicting Social Anxiety Three Months Following Treatment from SUITS Self and General Scores Controlling for Age, Treatment Type, & Initial Social Anxiety (n = 87).

Block	Variables	Δ F (df)	Δ R^2	p	β	p	η^2%
Regression 1							
1	1. Age	10.43 (5, 81)	.392	**<.01**	-.123	.24	1.00
	2. Treatment Type1				-.253	**.02**	4.12
	3. Treatment Type3				.016	.89	0.01
	4. Treatment Type4				-.360	**<.01**	7.08
	5. Initial social anxiety				.383	**<.01**	10.56
2	1. SUITS Self Total	6.21 (1, 80)	.044	**.02**	-.217	**.02**	4.37
Regression 2							
1	1. Age	10.43 (5, 81)	.392	**<.01**	-.134	.22	1.12
	2. Treatment Type1				-.264	**.02**	4.37
	3. Treatment Type3				.016	.90	0.01
	4. Treatment Type4				-.362	**<.01**	6.97
	5. Initial social anxiety				.382	**<.01**	10.50
2	1. SUITS Self Thinking	2.18 (3, 78)	.047	.10	-.127	.20	1.12
	2. SUITS Self Insight				-.128	.20	4.37
	3. SUITS Self Behaviour				-.031	.75	0.01
Regression 3							
1	1. Age	10.43 (5, 81)	.392	**<.01**	-.111	.30	0.81
	2. Treatment Type1				-.251	**.02**	4.04
	3. Treatment Type3				.057	.62	0.18
	4. Treatment Type4				-.305	**.01**	5.06
	5. Initial social anxiety				.440	**<.01**	14.06
2	1. SUITS General Total	1.45 (1, 80)	.011	.23	-.106	.23	1.08
Regression 4							
1	1. Age	10.43 (5, 81)	.392	**<.01**	-.123	.26	0.98
	2. Treatment Type1				-.259	**.02**	4.28
	3. Treatment Type3				.052	.66	0.15
	4. Treatment Type4				-.283	**.02**	4.24
	5. Initial social anxiety				.444	**<.01**	14.29
2	1. SUITS General Thinking	1.00 (3, 78)	.022	.40	.077	.53	0.30
	2. SUITS General Insight				-.134	.24	1.08
	3. SUITS General Behaviour				-.095	.41	0.50

Note. Columns reporting β, p and η^2% represent values for the final model (Block 1 & 2 together) for all regression models. SUITS = Skills Used In Therapy Survey.

Treatment engagement. Age was positively correlated with proportion of CBT sessions attended ($r(131) = .23$, $p = .01$) and there was a difference between genders such that females attended a greater proportion of CBT sessions ($F(1, 131) = 4.15$, $p = .04$). As a result age and gender were entered as additional covariates in Block 1 of the four regression models where proportion of CBT attended was the dependent variable.

In combination, variables in the final blocks of all four regression models significantly predicted the proportion of CBT sessions attended by clinical participants (SUITS Self total: adjusted $R^2 = .16$, $F(7, 124) = 4.67$, $p < .01$; SUITS Self factors: adjusted $R^2 = .18$, $F(9,122) = 4.16$, $p < .01$; SUITS General total: adjusted $R^2 = .16$, $F(7, 124) = 4.66$, $p < .01$; SUITS General factors: adjusted $R^2 = .15$, $F(9, 122) = 3.64$, $p < .01$). However, as can be seen in Table 4, SUITS total and SUITS factor scores were not found to significantly increase the explained variance in the proportion of CBT sessions attended after controlling for initial social anxiety level, treatment allocation, age, and gender.

Table 4

Hierarchical Multiple Regression Analyses Predicting Proportion of CBT Attended from SUITS Self and General Scores Controlling for Age, Gender, Treatment Type, & Initial Social Anxiety (N = 132).

Block	Variables	Δ F (df)	Δ R^2	p	β	p	η^2%
Regression 1							
1	1. Age	5.42 (6, 125)	.207	**<.01**	.355	**<.01**	10.37
	2. Gender				-.212	**.01**	4.24
	3. Treatment Type1				-.072	.50	0.30
	4. Treatment Type3				-.414	**<.01**	8.18
	5. Treatment Type4				-.150	.20	1.04
	6. Initial social anxiety				.088	.33	0.62
2	1. SUITS Self Total	0.33 (1, 124)	.002	.56	-.048	.56	0.21
Regression 2							
1	1. Age	5.42 (6, 125)	.207	**<.01**	.386	**<.01**	11.63
	2. Gender				-.199	**.02**	3.69
	3. Treatment Type1				-.060	.57	0.20
	4. Treatment Type3				-.368	**<.01**	6.20
	5. Treatment Type4				-.114	.33	0.59
	6. Initial social anxiety				.109	.22	0.94
2	1. SUITS Self Thinking	1.50 (3, 122)	.028	.22	-.163	.08	1.99
	2. SUITS Self Insight				.122	.18	1.17
	3. SUITS Self Behaviour				-.017	.85	0.02
Regression 3							
1	1. Age	5.42 (6, 125)	.207	**<.01**	.359	**<.01**	10.56
	2. Gender				-.217	**.01**	4.41
	3. Treatment Type1				-.068	.52	0.26
	4. Treatment Type3				-.409	**<.01**	8.07
	5. Treatment Type4				-.137	.25	0.86
	6. Initial social anxiety				.104	.24	0.90
2	1. SUITS General Total	0.29 (1, 124)	.002	.59	-.044	.59	0.18
Regression 4							
1	1. Age	5.42 (6, 125)	.207	**<.01**	.365	**<.01**	10.82
	2. Gender				-.217	**.01**	4.37
	3. Treatment Type1				-.066	.54	0.24
	4. Treatment Type3				-.406	**<.01**	7.90
	5. Treatment Type4				-.148	.22	0.98
	6. Initial social anxiety				.100	.26	0.83
2	1. SUITS General Thinking	0.27 (3, 122)	.005	.85	-.082	.47	0.34
	2. SUITS General Insight				.053	.61	0.17
	3. SUITS General Behaviour				-.011	.93	0.01

Note. Columns reporting β, p and η^2% represent values for the final model (Block 1 & 2 together) for all regression models. SUITS = Skills Used In Therapy Survey.

Incremental Validity

SUITS scores did not significantly predict the proportion of CBT sessions attended so incremental validity was only investigated using social anxiety post and three months following treatment as outcome variables. Furthermore, SUITS Self total score was the only SUITS score to significantly predict unique variance of level of social anxiety following treatment and represents more simply the combination of SUITS Self factor scores that explained significant additional variance in post-treatment social anxiety symptoms. As a result, incremental validity will only be reported using SUITS Self total score as the predictor variable of interest. Incremental validity was examined in the context of existing symptom-focused attitude individual difference predictors (motivation for change, expectancy for change, and treatment credibility) in addition to treatment type, pre-treatment symptom severity, and relevant demographic control variables.

In combination, control variables, initial social anxiety symptoms, symptom-focused attitudes, and SUITS Self total score significantly predicted post (adjusted $R^2 = .43$, $F(8, 79) = 7.45$, $p < .001$) and three-month outcome (adjusted $R^2 = .50$, $F(9, 67) = 7.39$, $p < .001$). As shown in Table 5, SUITS Self total score significantly predicted self-reported social anxiety at post-treatment but not three month follow-up, over and above existing symptom-focused attitude predictors and relevant control variables. Although the symptom-focused attitude predictors collectively explained significant variance in three month follow-up social anxiety symptoms none of these existing predictors explained unique variance in social anxiety symptoms when SUITS Self total score was included in the final model.

Table 5

Hierarchical Multiple Regression Analyses Predicting Social Anxiety Level Post and Three Months after Treatment from SUITS Self Total Score Over and Above Attitude Individual Difference Factors.

		Model 1		Model 2		Model 3					
Dependent Variable	Predictor	β	p	β	p	β	p	η^2%	Δ F (df)	Δ R^2	p
Post SIAS[a]	Treatment Type1	-.162	.16	-.125	.27	-.149	.17	1.39			
	Treatment Type3	.152	.19	.080	.50	.025	.82	0.04			
	Treatment Type4	-.227	.05	-.154	.20	-.223	.06	2.69			
	Initial social anxiety	.469	**<.01**	.413	**<.01**	.351	**<.01**	9.86	9.60 (4, 83)	.316	**<.01**
	Motivation for change			.002	.98	.002	.99	0.00			
	Expectancy for change			-.170	.10	-.015	.90	0.01			
	Treatment credibility			-.153	.16	-.097	.36	0.61	2.29 (3, 80)	.054	.08
	SUITS Self total					-.317	**.01**	5.95	8.26 (1, 79)	.060	**.01**
3-month SIAS[b]	Age	-.017	.88	-.042	.71	-.028	.81	0.04			
	Treatment Type1	-.290	**.01**	-.225	**.04**	-.233	**.03**	3.53			
	Treatment Type3	.063	.61	.003	.98	-.032	.80	0.05			
	Treatment Type4	-.365	**<.01**	-.285	**.02**	-.316	**.01**	5.38			
	Initial social anxiety	.428	**<.01**	.348	**<.01**	.340	**<.01**	7.51	9.08 (5, 71)	.390	**<.01**
	Motivation for change			.068	.51	.066	.52	0.31			
	Expectancy for change			-.278	**.01**	-.211	.08	2.37			
	Treatment credibility			-.161	.15	-.146	.19	1.30	4.38 (3, 68)	.099	**.01**
	SUITS Self total					-.127	.27	0.94	1.26 (1, 67)	.009	.27

Note. SIAS = Social Interaction Anxiety Scale, SUITS = Skills Used In Therapy Survey.

[a] $n = 88$

[b] $n = 77$

Discussion

This paper reports results of the first investigation of the SUITS, a measure of the pre-treatment CBT-like attitudes, within a clinical sample. The internal consistency of SUITS Self and SUITS General scales were found to be adequate to good within this clinical sample. Internal consistency results found in this study were higher than in previous research, which is a promising finding but needs replication in future clinical samples.

Discriminant Validity

Promising evidence was found in this study for the discriminant construct validity of the SUITS in relation to both demographic variables and social anxiety symptom severity. As hypothesised, SUITS total and factor scores were not found to be associated with age, gender, education, or employment status. These results support previous findings in nonclinical samples (McLellan, Peters, & Rapee, 2012) and treatment seeking samples (McLellan & Peters, 2012b) where SUITS scores were mostly found to be unrelated to demographic variables. Given that symptom severity is the current best predictor of CBT outcome, it is important to establish that the SUITS scales are not simply alternative measures of psychopathology or symptom severity. Replicating earlier research with nonclinical samples (McLellan, Peters, & Rapee, 2012), these results generally supported the hypothesis that the SUITS assesses a construct that is distinct from symptom severity, providing preliminary evidence of the discriminant validity of the SUITS within a clinical sample.

However, there were modest negative correlations between social anxiety symptoms and the SUITS Self total and SUITS Self Behaviour factor. It is likely the observed correlation between SUITS Self total score and anxiety symptoms is driven by the SUITS Self Behaviour subscale. Small negative correlations between psychopathology and SUITS scores, particularly the SUITS Behaviour factor, have been found in previous research using the SUITS in nonclinical samples (McLellan, Peters, & Rapee, 2012). Although statistically significant, these correlations were small in magnitude, with only approximately 3% of the

variance in social anxiety symptoms accounted for by SUITS Self Behaviour scores. It is not surprising that a small amount of overlap was found between attitudes that reflect behavioural flexibility and symptom severity, particularly anxiety symptoms, since avoidance of anxiety is acknowledged as a key maintaining factor in many CBT treatment models of anxiety disorders (Craske & Barlow, 2008; Franklin & Foa, 2008; Turk, Heimberg, & Magee, 2008).

Prediction of Treatment Outcome and Treatment Engagement

Despite evidence for only a weak relationship between SUITS Self scores and social anxiety symptoms, controlling for symptom severity in regression analyses allowed us to determine whether the SUITS provides additional prognostic information that does not reflect symptom severity. As hypothesised, SUITS Self total score significantly predicted degree of social anxiety symptoms immediately and three months following the completion of CBT, over and above initial social anxiety levels and relevant control variables. However, contrary to expectations, SUITS scores did not significantly predict the proportion of CBT sessions that were attended by clients. Although there was no statistical evidence that individual SUITS factor scores predicted outcome, the finding that SUITS Self total score predicted response to CBT, measured by end-state social anxiety symptoms is promising and extends on research in nonclinical samples linking the SUITS with CBT (McLellan & Peters, 2012a; McLellan, Peters, & Rapee, 2012).

Although significant, results indicated that the SUITS Self total score only contributed a small amount of additional variance over and above treatment type and initial levels of social anxiety in predicting post and three month follow-up social anxiety symptoms. When predicting post-treatment symptoms, initial social anxiety symptoms explained approximately 12% of the variance whereas SUITS Self total score explained 9%. Although small in magnitude, it is promising that the variability explained by the SUITS was comparable to that explained by the most established predictor of treatment outcome. Moreover, the finding that SUITS Self total score predicted outcome is important given the lack of research on predictors

of treatment outcome that go beyond demographic or disorder characteristics and the difficulty in identifying individual difference factors that predict treatment outcome after controlling for initial symptom severity (Eskildsen et al., 2010; Hamilton & Dobson, 2002; Keeley et al., 2008; Solvason et al., 2003). A stronger relationship was observed between the SUITS Self total score and post-treatment social anxiety outcomes compared to follow-up outcomes. The reduced variance in three month follow-up social anxiety symptoms explained by the SUITS Self total score is an interesting finding. Investigating SUITS scores as a predictor of treatment outcome at follow-up time points needs replication in future research. Future research may benefit from using larger samples receiving identical treatment to buffer power against participant attrition and minimise control variables in regression models.

Importantly, the negative direction of the relationship between pre-treatment CBT attitudes (i.e., SUITS scores) and social anxiety symptoms following treatment indicates that those with more CBT attitudes prior to treatment report less symptoms following therapy. This finding indicates that a closer match between broad attitudes prior to treatment and the therapeutic framework results in a greater reduction of symptoms, supporting research that suggests effective therapy capitalises on strengths rather than compensates for deficiencies (e.g., Baker & Neimeyer, 2003; Kocsis et al., 2009; van Doorn, McManus, & Yiend, 2012).

Previous research using the SUITS within nonclinical samples indicated that the SUITS Thinking factor was most strongly associated with constructs related to CBT (McLellan & Peters, 2012a; McLellan, Peters, & Rapee, 2012). It is therefore surprising that the SUITS Self Thinking factor did not predict outcome in this study. Results within this clinical sample suggest that it is the full range of personally held CBT-like attitudes, (represented by the SUITS Self total score), which are important in predicting outcome rather than one specific domain of CBT-like attitudes.

Results failed to support the hypothesis that SUITS scores would predict engagement with therapy. The null finding may be a result of the limited and gross measurement of

therapy engagement used in this study: the proportion of CBT sessions attended by clients. Future research could investigate alternative methods of measuring engagement with CBT, for example, homework compliance, or questionnaires measuring use of CBT skills during and following treatment. Furthermore, if future research confirms that SUITS scores predict treatment outcome it will be important to investigate whether the relationship between pre-treatment CBT attitudes and outcome is mediated by engaging with session content, homework, or use of skills beyond the therapy room.

Overall, given the lack of identified predictors of treatment outcome beyond disorder or symptom-focused variables, the results of this study are promising and suggest that further investigation of the role of pre-treatment CBT-like attitudes in predicting CBT outcome and engagement is warranted.

Incremental Validity

SUITS Self total score was found to significantly predict post-treatment levels of social anxiety over and above the three symptom-focused attitude predictors investigated in the study (motivation for change, expectancy for symptom change, and treatment credibility). Additionally, the inclusion of SUITS Self total score as a predictor reduced the unique variance explained by the symptom-focused attitude predictors. This result suggests that the SUITS and existing attitude predictors share common variance but the SUITS appears to be the better overall explanatory construct in predicting social anxiety outcomes at post-treatment. These results support the incremental validity of the SUITS and suggest that pre-treatment CBT-like attitudes represent a predictor of treatment outcome that adds value to existing symptom-focused attitude predictors. Importantly, while the SUITS Self total score did not uniquely predict social anxiety symptoms at follow-up, no symptom-focused attitude variables explained additional variance over and above initial social anxiety symptoms and other covariates at this time point.

Although not the aim of this study, findings indicate that symptom-focused attitude individual differences did not uniquely predict post-treatment or follow-up levels of social anxiety over and above initial levels of social anxiety and other predictors in the model. These predominately null results reflect the inconsistent findings that have been reported in the literature using individual differences in symptom-focused attitude factors to predict outcome (Borkovec & Mathews, 1988; Borkovec et al., 2002; Chambless et al., 1997; Devilly & Borkovec, 2000; Kampman et al., 2008; Keijsers et al., 1994b; Price et al., 2008; Safren et al., 1997; Smith et al., 2012; Vogel et al., 2006; Wolk & Devlin, 2001). Alternatively, the limited evidence for existing attitude predictors of treatment outcome in this study may be a result of the measures used to assess these constructs, particularly for motivation to change. Motivation for change, measured by the URICA, was not found to predict social anxiety symptoms at post or three months following treatment. When responding to URICA items participants were asked to rate their motivation for changing their social anxiety symptoms, which consists of a broad array of problems. Research suggests that the URICA has better predictive validity when a clearly defined behavioural problem is being treated (Derisley & Reynolds, 2000). As a result, an alternative measure of motivation for change may have produced different results. In order to determine the incremental validity of the SUITS against measures of motivation to change an alternative scale could be used in future, particularly when participants are rating their motivation to change broadly defined symptoms or problems.

Overall, these results provide initial evidence of the incremental validity of the SUITS over and above expectancy and motivation for symptom change and treatment credibility. These results highlight the value of the SUITS Self total score as a useful predictor of outcome following CBT.

General Limitations and Directions for Future Research

The findings of this study need to be interpreted within the context of several methodological issues. Firstly, this is the first study to investigate the SUITS within a clinical

sample and examine whether scores predict treatment outcome. As a result this study's findings are preliminary in nature. Future research with other clinical samples will be important in order to a) verify the psychometric properties of the SUITS within its intended sample, b) confirm the value of the SUITS, particularly the SUITS Self, as a predictor of treatment outcome, as well as c) further investigate the null findings with regard to the SUITS General. Given that the current study is the first study to use the SUITS to predict treatment outcome, it would be premature to exclude the use of the SUITS General before research using other clinical samples is undertaken. Additionally, it will be important that future research uses clinical samples receiving treatment for a range of presenting problems and measures treatment outcome using alternative methods; including varied symptom measures or composite scores, degree of improvement following treatment rather than end-state functioning, and using clinician ratings rather than self-report measures to reflect outcome.

Furthermore, the study was conducted using a sample taken from controlled clinical trials. Individuals attracted to research trials may score differently on the SUITS to those who present for treatment in public health or naturalistic clinical settings. As has been suggested in previous research using clinical trials (Weisz, Donenberg, Han, & Weiss, 1995) the findings in these studies may not generalise to naturalistic clinical settings. Future research in naturalistic clinical settings is therefore necessary and would add weight to the current findings. Alternatively, collecting responses on the SUITS from all clients who enquire about clinical trials, or before agreement or eligibility for inclusion in the research trial is determined, would allow for the investigation of whether SUITS scores predict refusal or dropout from clinical trials. Future research using clinical trials could address this.

Importantly, participants who did not complete the study at post or follow-up were excluded from relevant analyses. These participants may have differed in unmeasured and unknown ways from those who contributed data for the study. Every effort was made to collect post and follow-up responses from participants, even those who discontinued

treatment, and to encourage retention of all clients throughout the various time-points of the study, yet the impact of incomplete data is unknown and should be acknowledged when interpreting findings from this study. The null results at follow-up may be particularly affected by missing data. Sample size was reduced to $n = 78$ at this time point and participants who returned three month follow-up data reported more severe social anxiety symptoms initially than those who did not provide data, a difference that was not found when assessing missing data at post-treatment. Missing data at three month follow-up may have been more affected by restricted range of severity than post-treatment data, and may have resulted in an underestimation of effects at follow-up.

Overall, this study provides information about whether more CBT-like attitudes prior to treatment predict fewer symptoms following CBT. It would also be interesting to investigate whether the pattern of SUITS factor scores may be useful for ordering of CBT components to engage clients early in treatment or determine which treatment components to favour if delivering brief interventions. For example, commencing treatment with cognitive restructuring for a client with comparatively higher SUITS Thinking factor scores ensures that treatment more closely matches their general attitudes. Previous treatment matching research suggests that individuals who received the cognitive or behavioural component of treatment 'matched' to their preferred learning style experienced better outcome than when they did not receive the 'matched' treatment component (van Doorn et al., 2012). As a result, investigating the use of SUITS factor scores to assist matching clients to the different components of CBT interventions appears worthwhile.

Future research could also examine whether SUITS scores predict differential response to alternative therapies i.e., low scores on the SUITS may suggest an individual may benefit from mindfulness or acceptance and commitment therapy modalities. Alternatively, low SUITS scores may indicate to the therapist that a client would benefit from additional information about the treatment rationale in order to ensure their attitudes align with the

principles of the treatment that follows. Future research should investigate whether providing additional explanation and discussion about the treatment rationale for individuals scoring low on the SUITS improves their response to CBT, or whether SUITS scores determine suitability for non-CBT interventions.

Implications and Conclusions

Results indicate that scores on a new measure of broad pre-treatment attitudes aligned with therapy are distinct from demographic variables and symptom severity within a clinical sample, supporting the construct validity of the SUITS. Evidence was found to suggest that the SUITS Self scale, measuring personal agreement with CBT attitudes, predicted symptom severity immediately and three months following treatment but not attendance of therapy. Importantly, evidence was found to suggest that the SUITS Self predicted post-treatment outcome over and above existing symptom-focused attitude predictors. Although SUITS scores explained only a small amount of the variance in outcome over and above initial severity, these preliminary findings are important in establishing the psychometric strength of this new measurement tool, and suggest that further investigation in clinical samples will be a fruitful area for further research.

It is particularly promising that SUITS scores predicted post-treatment social anxiety after controlling for currently identified symptom-focused attitude predictors. These results confirm that identifying broad attitudes that align with treatment, but do not confound symptom severity, is useful and has important implications for clinical practice.

Research investigating the match between broad pre-treatment attitudes and CBT is important because this construct offers the ability to assess potential obstacles to treatment (or inversely, a match with treatment) that are not confounded with symptom severity, and so have the potential to influence clinical practice in meaningful ways. Research examining this predictor of treatment outcome, measured via a short self-report tool, may allow the identification of suitability for CBT, or provide clinicians with information that can inform

treatment selection or treatment modification (e.g., offering preparatory work to target CBT-attitudes or the CBT rationale, or alternatively, presenting the rationale for CBT in a manner that aligns more closely with pre-treatment attitudes). As a result, identifying pre-treatment broad (i.e., non-symptom focused) attitudes that reflect CBT skills using the SUITS may improve treatment response for more clients.

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Chapter 7

General Discussion

Background

Identifying predictors of treatment outcome has provided an avenue for optimising engagement and response to empirically supported treatments like cognitive behaviour therapy (CBT) for more clients. The match between an individual's pre-treatment attitudes and the principles and skills of CBT has, until now, not been empirically examined as an individual difference factor that may predict CBT outcome. One possible explanation for this lack of empirical investigation is that no pre-treatment measure of CBT-like attitudes existed. This thesis aimed to develop and assess the psychometric properties of a measure of pre-treatment CBT-like attitudes in order to investigate whether individual differences in this construct predict CBT outcome.

Overview of findings

The Skills Used In Therapy Survey (SUITS) was developed to determine the match between broad pre-treatment attitudes and CBT skills (McLellan, Peters, & Rapee, 2012). To comprehensively assess pre-treatment CBT-like attitudes the SUITS consists of two scales, names the SUITS Self and SUITS General. In particular, the SUITS Self measures personal agreement with CBT attitudes, whereas the SUITS General reflects an individual's ability to identify that others hold attitudes aligned with CBT principles and skills. Overall, scores on the SUITS reflect the degree to which a client's pre-treatment mindset philosophically aligns with the underlying principles and skills of CBT. The SUITS was designed to measure broad attitudes rather than symptom-focused attitudes.

Research within this thesis indicates that the psychometric properties of the SUITS are promising. Results from this thesis also provide initial support for the suggestion that pre-treatment CBT-like attitudes (reflecting a mindset that philosophically aligns with the underlying principles and skills of CBT) predict treatment response.

Factor structure

Evidence for a strong factor structure for the SUITS has been found in undergraduate, community, and treatment-seeking samples (Chapters 2 and 5). Both the Self and General scales were found to specifically measure three factors. These factors reflect the causal role of thinking in determining emotional and behavioural responses (Thinking), awareness of and the ability to express internal experiences (Insight), and flexibility and learning from behaviour and experiences (Behaviour). Additionally, scores on each scale of the SUITS were found to be appropriately summarised by a total score.

Reliability

Adequate internal consistency was demonstrated across a number of undergraduate and community samples (Chapters 2, 3, 4, and 5). Results were adequate given the small number of items within each SUITS factor. Additionally, internal consistency across all studies (Chapters 2, 3, 4, and 5) was in line with results found for other measures using an online delivery method (Whitener & Klein, 1995). Importantly, good internal consistency was found within the clinical sample presented in Chapter 6. This is a promising result for the internal consistency of the SUITS, given that a clinical sample represents the intended population for the SUITS.

Satisfactory test-retest reliability over a brief interval was found within the undergraduate sample reported in Chapter 4. Although slightly lower than the ideal level of .8, the reported reliability was in line with other commonly used measures of personality (Caruso, 2000; Gosling, Rentfrow, & Swann, 2003; Rammstedt & John, 2007) or brief scales measuring clinically-relevant constructs (Yin & Fan, 2000), especially when examined over a short interval (Bhar, Beck, & Butler, 2012).

Validity

Overall, findings within this thesis provide evidence for the construct, criterion, and incremental validity of the SUITS across a range of samples. Support was found for the

construct validity of the SUITS within undergraduate and community samples. As expected, SUITS scores were typically found to be distinct from demographic variables (Chapters 2 and 5), measures of psychopathology (Chapter 2), measures of verbal reasoning (Chapter 3), and social desirability (Chapter 4), but related to constructs considered to reflect general adaptive functioning or therapy skills (Chapter 2). Research in nonclinical samples (Chapters 2, 3, and 4) further suggests that the SUITS, especially the SUITS Thinking factor, has particular relevance for CBT, supporting the construct validity of the instrument. In Chapter 3, SUITS Self and SUITS General scores were associated with adaptive cognitive constructs, and SUITS Thinking factor scores were associated with cognitive constructs specifically relevant to CBT. Within the clinical sample reported in Chapter 6, SUITS scores were found to be distinct from demographic variables. Additionally, most SUITS scores were unrelated to pre-treatment social anxiety symptoms. Only SUITS Self total score and SUITS Self Behaviour factor score were weakly associated with pre-treatment symptoms. Taken together, results from the empirical studies presented in this thesis support the construct validity of the SUITS within undergraduate, community, and clinical samples.

In addition to construct validity, evidence was provided for the criterion validity of the SUITS within nonclinical samples. SUITS scores predicted clinician ratings of an underlying CBT mindset demonstrated during video-recorded discussions with participants (Chapter 4). SUITS scores were also found to significantly predict participant judgements of CBT treatment credibility, but not pharmacological treatment credibility (Chapter 2). Importantly, while SUITS scores were weakly related to psychopathology in some studies reported within this thesis, SUITS scores were found to predict CBT credibility over and above psychological symptoms in a nonclinical sample (Chapter 2), demonstrating the incremental validity of the scales.

Predictor of Treatment

Overall, results from this thesis are promising for individual differences in pre-treatment CBT-like attitudes predicting CBT outcome. Within a clinical sample of adults diagnosed with social phobia, pre-treatment CBT-like attitudes were found to predict response to CBT immediately and three months following treatment, but not treatment engagement. Specifically, SUITS Self total score predicted outcome post and three months following treatment. SUITS Self factor scores were not unique predictors of outcome, nor were SUITS General scores. Additionally, SUITS Self total score predicted post-treatment outcome over and above existing and symptom-focused attitude factors, like motivation for change, expectancy for change, and treatment credibility. Although SUITS Self total score did not predict follow-up levels of social anxiety, over and above existing attitude predictors, none of the three existing symptom-focused attitude factors in the model uniquely explained outcome at follow-up. Overall, results presented in this thesis provide support for pre-treatment CBT-like attitudes predicting CBT outcome and as a result provide the most convincing evidence for the predictive criterion and incremental validity of the SUITS.

The Construct of Pre-treatment CBT-like Attitudes

The construct of CBT-like attitudes was defined in this thesis and an instrument was developed to measure pre-treatment CBT-like attitudes. An integral component of the definition of CBT-like attitudes was that these attitudes would reflect a mindset that philosophically matched or aligned with the principles and skills of CBT. As a result, it was important that the developed survey measured attitudes that aligned with common components of CBT across a range of disorders. The factors that were determined by initially exploratory factor analytic procedures and subsequently confirmatory factor analytic procedures represented fundamental components of CBT for many disorders. The Thinking factor represents the causal influence of thoughts for determining emotional and behavioural responses. This factor represents the concept of cognitive mediation that is considered by

many researchers to be the most fundamental principle of CBT (Carter, Forys, & Oswald, 2008; Dobson & Dozois, 2010; Reinecke & Freeman, 2003). The Behaviour factor represents the CBT principle of practical experimentation and learning from direct experience. Behavioural activation is a fundamental component of many cognitive-behavioural interventions for depression (Beck, Rush, Shaw, & Emery, 1979), and exposure or behavioural experiments are core components of cognitive-behavioural interventions for a range of anxiety disorders (Rodebaugh, Holaway, & Heimberg, 2004). Lastly, the Insight factor represents another core objective of CBT; to facilitate reflection and understanding of internal experiences, especially to understand mechanisms maintaining distress. The factors revealed by statistical procedures suggest that the SUITS measures attitudes that reflect fundamental principles of CBT for a range of disorders. Measurement of common CBT components suggests that the SUITS could be used to predict CBT outcome for a wide range of disorders. This broad applicability increases the clinical utility of the tool.

Another important feature of the definition of CBT-like attitudes was the broad nature of the attitudes intended to be measured. Specifically, it was a primary objective that CBT-like attitudes measure more than symptom-focused attitudes, unlike many of the existing individual difference attitude predictors. When generating the instructions and items of the SUITS careful effort was taken to eliminate reference to symptoms or disorder in order to minimise the symptom-focus of reported attitudes. In addition to strategies employed during the development of the scales, SUITS scores were typically found to be unrelated to measures of psychopathology in nonclinical samples (Chapter 2) and a measure of pre-treatment severity in a clinical sample (Chapter 6). These results support the construct validity of the SUITS as a measure of broad rather than symptom-focused attitudes.

It is important that pre-treatment CBT-like attitudes measure broad attitudes rather than symptom-focused attitudes for a number of reasons. Firstly, there are a large number of predictors of treatment outcome investigated in the literature. It is therefore important that

new predictors offer the potential to contribute additional information than what is provided by the body of predictors already investigated. Given the consistency of findings reporting symptom severity as a predictor of outcome, attempts should be made to identify additional prognostic factors that are clearly distinct from symptoms. Measuring broad rather than symptom-focused attitudes may facilitate this. Establishing prognostic indicators that are distinct from symptom severity provides clinicians with additional information that can be used to maximise treatment outcome for more clients. Additionally, investigating broad rather than symptom-focused attitudes satisfies the call for researchers to acknowledge the person of the client beyond their disorder (Norcross & Wampold, 2011).

Both the ability to identify CBT-like attitudes in others, and personally held CBT-like attitudes were measured via the SUITS General and SUITS Self respectively. Results indicate that personally held attitudes aligned with CBT (SUITS Self) were not strongly related to symptoms within nonclinical or clinical samples. While there was strong evidence for the construct validity of the SUITS General this scale was not found to predict outcome. It is likely that the SUITS Self represents the most useful measure of pre-treatment attitudes aligned with CBT. However, only a single clinical sample was used in this thesis, so results require replication before the SUITS General is excluded from future research.

Pre-treatment CBT-like Attitudes as a Predictor of Outcome

Personally holding broad CBT-like attitudes prior to therapy was found to predict post and follow-up levels of symptoms in a clinical sample receiving CBT (Chapter 6). This is an important finding given the limited research focusing on predictors of CBT outcome beyond demographic variables, features of disorder, or symptom severity. While the amount of variance in outcome explained by the SUITS Self was small, results were in line with, or slightly larger than, the amount of variance in outcome that has been explained by other individual difference predictors in the literature. For example, symptom-focused attitude predictors have been reported to explain between 1% and 8% of the variance in outcome

(Safren, Heimberg, & Juster, 1997). Additionally, SUITS Self predicted outcome at post-treatment over and above existing symptom-focused attitude predictors of outcome. This finding indicates that pre-treatment CBT-like attitudes offer unique information for attempts to match individuals to treatment based on their attitudes prior to therapy.

Importantly, the direction of the relationship between SUITS scores and outcome supports the suggestion that the greater the match between pre-treatment attitudes and CBT principles and skills, the better the treatment outcome. This finding supports research that indicates effective treatment capitalises on strengths rather than compensates for deficiencies (Baker & Neimeyer, 2003; Beutler et al., 1991; Beutler, Harwood, Kimpara, Verdirame, & Blau, 2011; Beutler, Machado, Engle, & Mohr, 1993; Elkin et al., 1999; Kadden, Cooney, Getter, & Litt, 1989; Kocsis et al., 2009; Rude, 1986; Rude & Rehm, 1991; Simons, Lustman, Wetzel, & Murphy, 1985; Sotsky et al., 1991; van Doorn, McManus, & Yiend, 2012). Individuals who hold broad pre-treatment attitudes aligned with the principles of treatment may respond better because they experience the suggested capitalising effect of treatment. That is, treatment allows individuals who already hold broad attitudes aligned with therapy to apply these attitudes to their symptoms. Alternatively, treatment is not as effective for individuals reporting fewer pre-treatment attitudes aligned with therapy. It is possible that those with attitudes aligned with CBT may begin to apply CBT procedures immediately, whereas those who do not have attitudes aligned with treatment spend time at the beginning of therapy changing broad attitudes to match the treatment model prior to being able to adopt the CBT procedures, or alternatively, these individuals fail to engage with the CBT procedures when their broad attitudes do not align with therapy. However, it is also possible that those with pre-treatment CBT-like attitudes may improve without treatment. Future research investigating the SUITS within a clinical trial can clarify this alternative explanation for the results by including a waitlist control group.

Despite these promising results, the lack of an association between pre-treatment CBT-like attitudes and engagement, measured by therapy attendance, was unexpected. However, these null results are consistent with some research that has found a weaker relationship between attitude predictors and engagement or dropout from treatment rather than CBT outcome (Eskildsen, Hougaard, & Rosenberg, 2010).

Although not a primary aim of the empirical study presented in Chapter 6, results in this thesis indicate that individual differences in symptom-focused attitudes did not uniquely predict post-treatment or follow-up levels of social anxiety over and above pre-treatment symptoms and other covariates in the regression models. These results support the mixed findings reported in the literature regarding the link between symptom-focused attitudes and treatment outcome (Borkovec & Mathews, 1988; Borkovec, Newman, Pincus, & Lytle, 2002; Chambless, Tran, & Glass, 1997; Devilly & Borkovec, 2000; Kampman, Keijsers, Hoogduin, & Hendriks, 2008; Keijsers, Hoogduin, & Schaap, 1994; Price, Anderson, Henrich, & Rothbaum, 2008; Safren et al., 1997; Smith, Norton, & McLean, 2012; Vogel, Hansen, Stiles, & Gotestam, 2006; Wolk & Devlin, 2001). Such findings add weight to the important contribution of identifying an attitude predictor that represents an underlying match with therapy and therefore represents an individual difference factor that may provide information about potential obstacles to therapy yet is distinct from symptoms. It appears that the SUITS may provide meaningful additional information to clinicians and researchers in attempts to maximise treatment for more clients.

When investigating whether SUITS scores predict treatment outcome over and above symptom-focused attitude predictors, the inclusion of SUITS Self total score reduced variance explained by symptom-focused attitude predictors, which suggests that the SUITS and existing attitude factors share common variance. However, at post-treatment, SUITS Self total score explained additional unique variance in CBT outcome to these existing and symptom-focused predictors. This finding suggests that investigating pre-treatment CBT-like attitudes

as a predictor of CBT outcome adds value to existing symptom-focused attitude factors typically examined in the literature.

These incremental validity findings align with results reported in this thesis where SUITS scores were typically found to be unrelated to measures of psychopathology (Chapter 2), and pre-treatment symptom severity (Chapter 6). Even though a weak relationship was found between some SUITS scores and pre-treatment symptom severity, SUITS scores predicted post-treatment symptoms over and above pre-treatment levels of social anxiety. Such a result confirms the suggestion that the SUITS is measuring attitudes that are not necessarily symptom-focused and that measuring broad pre-treatment CBT-like attitudes offers a promising pre-treatment attitude predictor of outcome.

Strengths of the Present Research

A consistently identified limitation of many studies examining predictors of outcome is the use of measures with limited psychometric information (Steketee & Chambless, 1992). A strength of the current thesis was that a thorough investigation of the psychometric properties of the instrument developed to measure pre-treatment CBT-like attitudes (the SUITS Self and SUITS General) was undertaken before the SUITS was used to predict outcome within a clinical sample. Ensuring the psychometric strength of the instrument limits measurement issues that might otherwise lead to consistent findings in future research.

When developing the SUITS attempts were made to ensure the content validity of the instrument. This is an important strength of the research. Additionally, the factor structure of the tool was assessed using both exploratory and confirmatory factor analytic procedures across different samples. In particular, examining the factor structure of the SUITS within a treatment-seeking sample (the intended sample for the SUITS) was a strength of this research. The construct validity of the SUITS was also carefully investigated comparing SUITS scores to a range of relevant constructs and across various samples. This procedure allowed the investigation of both the convergent and divergent validity of the SUITS to be reported across

the empirical papers of this thesis. Criterion and incremental validity were also investigated, using proxy measures within nonclinical samples and ultimately assessing the SUITS as a predictor of outcome within a clinical sample. Multiple methods of determining the reliability of the instrument were also undertaken. The comprehensive investigation of the psychometric properties of the SUITS as a measure of pre-treatment CBT-like attitudes is a clear strength of this research.

This thesis undertook a stringent investigation of the utility of the SUITS and pre-treatment CBT-like attitudes as a new predictor of CBT outcome by examining the prediction of outcome over and above existing but symptom-focused attitude predictors. A strength of this research was to provide information about the added value that this individual difference factor may offer to an already large body of literature on predictors of treatment outcome.

The current thesis aimed to identify an individual difference factor that has important clinical utility. Pre-treatment CBT-like attitudes represent individual differences that can inform treatment selection and clinical practice in meaningful ways. It represents an individual difference that is distinct from symptom severity, maximising the additional value provided to clinicians over and above symptom-severity, the current best predictor of treatment outcome and primary strategy currently used to select treatment for prospective clients. It is important that investigated predictors of outcome represent factors that have the potential to improve treatment response for more clients, the primary objective of such research. It is useful for clinicians to understand that effective treatment capitalises on strengths rather than compensates for weaknesses, and that a pre-treatment mindset aligned with therapy predicts better response to therapy. As a result, pre-treatment CBT-like attitudes measured by the SUITS may provide useful information to clinicians in order to determine suitability for CBT, identify important factors that can be addressed prior to commencement of CBT, or allow modifications to be made to standard CBT protocols with respect to the treatment rationale or the order of CBT components provided to some clients.

Finally, unlike many empirical papers investigating predictors of outcome, the clinical study presented in this thesis was undertaken with the primary objective of examining prediction of outcome. This is a strength of the current research because necessary information was collected in advance enabling predictors beyond demographic, disorder, and severity to be thoroughly examined, something rarely done in studies predicting treatment outcome.

Limitations of the Present Research

Several limitations of the research should be noted. Firstly, the SUITS was developed to measure pre-treatment CBT-like attitudes among individuals seeking treatment. Initial psychometric investigation of the SUITS, however, was conducted primarily within nonclinical samples. While this is a limitation of the development of the SUITS, replication and further investigation of the psychometric properties of the SUITS utilised a range of samples, including a clinical sample, demonstrating consistent and sound results. Positive findings within the clinical sample used in this thesis ultimately suggest that the SUITS is a psychometrically sound measure within its intended population, individuals commencing treatment.

Within the empirical papers of this thesis SUITS General scores demonstrated strong construct validity within nonclinical samples, yet within the clinical sample reported in Chapter 6, SUITS Self scores demonstrated strongest prediction of outcome. The minimal investigation of the construct validity of the SUITS within clinical samples is a limitation of the current research. Investigating the construct validity of SUITS within a clinical sample would provide more conclusive evidence for the validity of the SUITS. Additionally, while many constructs were investigated to determine the construct validity of the SUITS and effort was made to assess both similar and dissimilar constructs (convergent validity) and constructs considered to be unrelated to CBT-like attitudes (divergent validity), a limitation of this thesis is that additional constructs could have been investigated in order to assess the validity of the

instrument. Given the objective of measuring attitudes that align with CBT but do not focus on symptomatology, it would be useful to empirically investigate whether SUITS scores are distinct from measures of dysfunctional thinking generally considered to be targeted in CBT, for example, disordered thinking measured by the dysfunctional attitudes scale.

A further limitation of the current research is that consistent information about prior knowledge of CBT and/or previous experience with treatment was not available across the two clinical trials contributing data presented in Chapter 6. Failing to control for these potentially influential variables is a limitation of the current research. Additionally, missing data and the reduction in sample size, particularly at follow-up, is a limitation specific to the empirical paper reported in Chapter 6. This limitation makes the unexpected and null results of CBT-like attitudes predicting follow-up levels of social anxiety ambiguous. Although attempts were made to maximise retention of participants in the research components of both clinical trials, the missing data at follow-up is a particularly important limitation of the current thesis. It is likely that this limitation, however, produced an underestimation of the relationship between pre-treatment CBT-like attitudes and treatment outcome rather than inflated prediction of outcome. Nevertheless, the small sample size and issue of missing data across the study needs to be addressed in future research.

Finally, results in this thesis may reflect different attitudes held by people attracted to research (Weisz, Donenberg, Han, & Weiss, 1995). Studies investigating the relationship between the SUITS and outcome within naturalistic settings may find different results. Replicating findings within naturalistic clinical settings would determine whether the positive preliminary results found in this thesis operate beyond samples agreeing to clinical intervention within research settings.

Suggestions for Future Research

This thesis presented promising findings for the prognostic value of the SUITS as a measure of individual differences in pre-treatment CBT-like attitudes. Although the results

are promising, the clinical sample reported in this thesis is the first study to investigate pre-treatment CBT-like attitudes as a predictor of CBT outcome. Replication is necessary to confirm the results. Future research would benefit from using different clinical populations, larger samples, and consistently delivered interventions in order to improve conclusions that can be offered from research findings. Additionally, more advanced measures of treatment engagement should be used to extend the initial investigation of the relationship between SUITS scores and the primitive measure of engagement used in this thesis. Measures of the use of CBT skills or homework compliance represent alternative strategies for collecting a more comprehensive measure of treatment engagement. Furthermore, a limitation of the current research includes the reliance on self-report measures, particularly of outcome. Clinician ratings of severity or behavioural measures of outcome should be used in future research.

Given the positive findings for individual differences in broad pre-treatment CBT-like attitudes as a predictor of CBT outcome, key areas for future research (beyond replicating findings) should focus on empirically determining the implications of this prognostic indicator for clinical practice. Implications of these findings for clinical practice include determining suitability for CBT based on scores on the SUITS. Research investigating potential cut-off scores would inform clinical decision making about the suitability of CBT for an individual prior to commencing therapy.

Alternatively, future research could investigate whether treatment outcome can be improved for clients who report few pre-treatment CBT-like attitudes by addressing the poor pre-treatment match prior to commencing standard CBT protocols. For example, clients might be provided with additional information about the treatment rationale, might be provided with a rationale for treatment that more closely matches a client's attitudes prior to therapy, or directly targets broad attitudes in an effort to foster CBT-like attitudes prior to embarking on CBT.

Furthermore, future research should attempt to understand how different patterns of scores on SUITS factors inform response throughout treatment, particularly response to the different components of CBT. For example, a particular profile of SUITS factor scores (high on SUITS Thinking factors but low on SUITS Behaviour factors; or vice versa) may predict progress or rate of change at various time points throughout therapy (i.e., better progress after introducing the CBT component/skill matched to the client's pre-treatment CBT-like attitudes). That is, an individual who scores high on the Thinking factors of the SUITS but low on the Behaviour factors of the SUITS might respond better to cognitive restructuring techniques rather than exposure, whereas the reverse may be true for an individual who scores high on the SUITS Behaviour factors but low on the SUITS Thinking factors. Future research should investigate whether SUITS factor scores predict change at the time point where the CBT-matched skill is introduced. Furthermore, profiles of SUITS scores may inform clinical decisions about ordering the cognitive or behavioural components of CBT that are delivered. For example, skills that match with pre-treatment mindsets could be delivered first in order to facilitate engagement in therapy. Alternatively, SUITS scores may provide clinicians with information to prioritise matched components of CBT when brief interventions need to be delivered. It is important that future research empirically investigate the range of clinical implications offered by this new predictor of CBT outcome.

Finally, research from this thesis provides consistent evidence to suggest that SUITS scores are relevant to CBT. However, future research should empirically examine whether SUITS scores predict outcome specifically for CBT by investigating the prognostic value of the instrument for other therapy modalities (e.g., acceptance and commitment therapy, psychodynamic therapy, dialectical behaviour therapy). Research on psychological mindedness indicated that tools should be developed for particular therapies, so the SUITS, developed for CBT, should predict outcome specific to CBT but not alternative therapies.

Summary and Concluding Remarks

Research indicates that CBT is an efficacious treatment for a range of psychological disorders. However, CBT does not work equally well for all clients. Research investigating factors that predict individual differences in treatment outcome has provided one avenue for exploring methods of optimising engagement and response to empirically supported treatments like CBT for more clients. This thesis aimed to extend attempts to maximise treatment response by investigating whether broad pre-treatment attitudes that are aligned with the principles and skills of CBT predict CBT outcome. A self-report tool with two scales named the Skills Used In Therapy Survey (SUITS) was developed and the psychometric properties of the instrument were comprehensively assessed. Results supported the strength of the SUITS as a measure of broad adaptive attitudes that are specific to CBT. Importantly, personally holding attitudes aligned with CBT skills (SUITS Self) was found to predict CBT outcome but not engagement. Furthermore, broad pre-treatment CBT-like attitudes predicted post CBT outcome over and above existing attitude predictors, indicating that pre-treatment attitudes aligned with CBT provide unique prognostic information. Measurement of pre-treatment CBT-like attitudes may allow the identification of suitability for CBT, or provide clinicians with information that can inform treatment selection or treatment modification. Importantly, identifying broad pre-treatment attitudes that reflect CBT skills using the SUITS represents an important prognostic indicator that may provide the opportunity to improve treatment response for more clients. Future research is needed to replicate findings about this new individual difference predictor of CBT outcome and empirically investigate the range of potential implications for clinical practice offered by this prognostic factor.

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Appendix

Appendix A - Skills Used In Therapy Survey (SUITS)

SUITS Self

Read EACH statement and select the option that indicates how much you BELIEVE or AGREE that the statement is TRUE of YOU. Mark the response that reflects what you actually believe, not what you might like to believe. There are NO right or wrong answers. Do not spend too long on any statement, but mark the first response that comes to you. Respond to items according to the following rating scale: 1 = Strongly Disagree; 2 = Disagree; 3 = Neither Disagree nor Agree; 4 = Agree; 5 = Strongly Agree.

1	If I change the way I think my emotions would be different	**1**	**2**	**3**	**4**	**5**
2	If I change the way I think I would behave differently	**1**	**2**	**3**	**4**	**5**
3	I put my feelings into words	**1**	**2**	**3**	**4**	**5**
4	I am able to be really aware of how I am feeling	**1**	**2**	**3**	**4**	**5**
5	I put my thoughts into words	**1**	**2**	**3**	**4**	**5**
6	I go and face up to things that are difficult	**1**	**2**	**3**	**4**	**5**
7	I can change the way I feel about things by changing the way I think about them	**1**	**2**	**3**	**4**	**5**
8	The way I think about something influences what I do about it	**1**	**2**	**3**	**4**	**5**
9	I identify my emotions	**1**	**2**	**3**	**4**	**5**
10	I can change what I do in a situation by changing the way I think about it	**1**	**2**	**3**	**4**	**5**
11	When good or bad events happen to me I get a chance to learn something	**1**	**2**	**3**	**4**	**5**
12	I learn from what I do	**1**	**2**	**3**	**4**	**5**
13	Even though trying new things is difficult for me, it means things change for the better	**1**	**2**	**3**	**4**	**5**

SUITS General

Read EACH statement and **select** the option that indicates how much you BELIEVE or AGREE that the statement is GENERALLY TRUE. The statement may NOT be TRUE of YOU but rate how much you believe it is GENERALLY true. Respond to items according to the following rating scale: 1 = Strongly Disagree; 2 = Disagree; 3 = Neither Disagree nor Agree; 4 = Agree; 5 = Strongly Agree.

1	Learning comes from doing	**1**	**2**	**3**	**4**	**5**
2	Thoughts can be put into words	**1**	**2**	**3**	**4**	**5**
3	The way people think about something will influence how they feel about it	**1**	**2**	**3**	**4**	**5**
4	It is good to go and face up to difficulties	**1**	**2**	**3**	**4**	**5**
5	What people experience in their body (for example heart rate or sweating) would be different if they changed the way they thought about things	**1**	**2**	**3**	**4**	**5**
6	If people change what they are thinking about something, they can change the way they feel about it	**1**	**2**	**3**	**4**	**5**
7	Emotions can be identified	**1**	**2**	**3**	**4**	**5**
8	When good or bad events happen to people this gives them a chance to learn something	**1**	**2**	**3**	**4**	**5**
9	If people change the way they think they would behave differently	**1**	**2**	**3**	**4**	**5**
10	It is possible for people to really be aware of how they are feeling	**1**	**2**	**3**	**4**	**5**
11	Feelings can be put into words	**1**	**2**	**3**	**4**	**5**
12	Even though trying new things might be difficult it may mean things change for the better	**1**	**2**	**3**	**4**	**5**
13	People can change what they do in a situation by changing the way they think about it	**1**	**2**	**3**	**4**	**5**
14	Changing thoughts changes emotions	**1**	**2**	**3**	**4**	**5**

Appendix B – Clinician-Rated Match with CBT Principles

Rate how well this person demonstrated a CBT like philosophy in their discussion of the problem and it's resolution (i.e., consider how much the persons discussion matched with CBT principles/skills).

Rate the following after the completion of the discussion using the following scale.

0 - - - - - - - - - - 1 - - - - - - - - - - - - 2 - - - - - - - - - - - - 3 - - - - - - - - - - - - - 4

Not At All Minimally To Some Degree Substantially Extensively

1. How much did the person seem to have reflected on the problem?
2. How well was the person able to express their reflections?
3. How well did the person understand what contributed to the problem developing?
4. How balanced (e.g. considering positive and negative; self and other) was the persons understanding of the mechanisms at play that contributed to the problem developing?
5. How well did the person demonstrate a link between their thoughts and their emotional experience relating to the problem?
6. How much did the person seem aware of their emotions in relation to the problem?
7. How much did the person seem to have reflected on the solution?
8. How well was the person able to express these reflections?
9. How well did the person understand what contributed to the problem being resolved?
10. How balanced (e.g. considering positive and negative; self and other) was the persons understanding of the mechanisms at play that contributed to the problem being resolved?
11. How well did the person demonstrate a link between their thoughts and their emotional experience relating to the solution?
12. How much did the person seem aware of their emotions in relation to the solution?
13. How much did the person treat the experience as an opportunity to learn things about themselves, others, the world?